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Heal the Bay is a non-profit environmental organization dedicated to making Santa Monica Bay and Southern California coastal waters safe and healthy again for people and marine life. We use research, education, community action and policy programs to achieve this goal.

Second Edition, June 2001

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| | |
|--|-----------|
| Executive Summary | 1 |
| Introduction | 5 |
| The Southern California Beach Report Card | 9 |
| What Type of Water Quality Pollution Is Measured? | |
| Water Quality Thresholds | |
| Heal the Bay's Grading System | |
| What Does This Mean to the Beach User? | |
| Why Not Test for Viruses? | |
| 2000–2001 Analyses | 13 |
| Southern California | |
| The Beach Report Card by County | 15 |
| Santa Barbara | |
| Ventura | |
| Los Angeles | |
| Orange | |
| San Diego | |
| Beach Pollution Patterns | |
| 2000 Federal and State Legislation | 29 |
| Federal | |
| State | |
| Updates and Future Recommendations | 35 |
| Acknowledgements | 45 |
| Appendix A | 47 |
| Appendix B | 49 |
| Appendix C | 65 |



EXECUTIVE SUMMARY

Heal the Bay's 11th Annual Beach Report CardSM provides essential water quality information to the millions of people who swim, surf or dive in Southern California coastal waters. Essential reading for ocean users, the report card grades over 375 locations on an "A"–"F" scale based on the risk of adverse health effects to humans. The grades are based on daily and weekly bacterial pollution levels in the surf zone. The program has developed from an annual review of beaches in Santa Monica Bay to weekly updates of beaches throughout Southern California. All this information is available in print and at www.healthebay.org. This year, Heal the Bay is proud to announce the expansion of the Beach Report Card program to coastal counties statewide. Starting in June 2001, the Beach Report Card will cover over 475 beaches from Del Norte County through San Diego County.

The 2000-2001 Annual Beach Report Card shows that most beaches had very good water quality in dry weather, with 234 of 375 (62%) locations receiving "A" grades. Also, there were 59 (16%) "B"s, 26 (7%) "C"s, 16 (4%) "D"s and 40 (11%) "F"s. Numerous Southern California beaches vied for the "Beach Bummer" crown this year (the monitoring location with the poorest dry weather water quality). The bottom 10 beaches were: Cabrillo Beach, harborside at San Pedro Bay in Los Angeles County (10th); Surfrider Beach at Malibu in Los Angeles County (9th); Avalon Bay Beach at Catalina Island in Los Angeles County (8th); Tijuana Slough (Tijuana River outlet) in San Diego County (7th); the Visitor's Center (projection of Clairemont Dr.) at Mission Bay in San Diego County (6th); Baby Beach at Dana Point Harbor in Orange County (5th); Pacific Beach at PB Point (downcoast of Linda Way) in San Diego County (4th); Doheny Beach at Dana Point in Orange County (3rd); Channel Islands Harbor Beach Park (Hobie & Kiddie Beach) in Ventura County (2nd). This year's winner of the dubious Southern California "Beach Bummer" crown is Arroyo



Quemada in Santa Barbara County. Finishing third for the title last year, Arroyo Quemada “won” the crown because 73% of the monitoring days exceeded thresholds for at least one fecal bacteria indicator.

During wet weather, very few beach locations in Southern California escaped the influence of polluted stormwater runoff. Of the 277 locations monitored, only 49 of them received good-to-excellent water quality marks (26 (9%) “A”s and 23 (8%) “B”s) during wet weather, while 228 locations received fair-to-poor water quality marks (18 (6%) “C”s, 22 (8%) “D”s and 188 (68%) “F”s). Overall, 68% of the monitoring locations received a grade of “F” during wet weather, compared to only 11% during dry weather.

In addition to grading the beaches throughout Southern California, Heal the Bay analyzed the data to determine if there were any Southern California-wide dry weather water quality monitoring trends. Heal the Bay found that 91.4% of the 21,100 beach sample days (the number of dry weather days when samples

were collected at the 375 monitoring locations from April 2000 through March 2001) met State bathing water standards for all bacterial indicators. Another finding from our analysis was that water quality at open ocean beaches was significantly better than those beaches impacted by storm drains or located within enclosed bays or harbors. Approximately 81% of open ocean beaches received an “A” grade, compared to 67% of beaches impacted by a storm drain, and 37% of beaches found within an enclosed bay, harbor or marina.

This year, Governor Davis proposed, as part of the state budget, \$100 million for a Clean Beach Initiative to protect and restore the health of California’s beaches. The funds would be the first significant allocation for protecting the public health of the 100 million people who visit California’s beaches annually. The Clean Beach Initiative is broadly supported by health agencies,

“Beach Bummer” Locations

- Arroyo Quemada in Santa Barbara County
- Channel Islands Harbor Beach Park (Hobie & Kiddie Beach) in Ventura County
- Doheny Beach at Dana Point in Orange County
- Pacific Beach at PB Point (down-coast of Linda Way) in San Diego County
- Baby Beach at Dana Point Harbor in Orange County
- The Visitor’s Center (projection of Clairemont Dr.) at Mission Bay in San Diego County
- Tijuana Slough (Tijuana River outlet) in San Diego County
- Avalon Bay Beach at Catalina Island in Los Angeles County
- Surfrider Beach at Malibu in Los Angeles County
- Cabrillo Beach, harborside at San Pedro Bay in Los Angeles County



coastal cities and counties, researchers from numerous California universities, and the environmental community.

The Beach Report Card is based on the routine monitoring of beaches conducted by local health agencies and dischargers. Water samples are analyzed for bacteria that indicate pollution from various sources, including fecal waste. The higher the grade a beach receives, the lower the risk of illness to ocean users. The report is not designed to measure trash or toxins. The Beach Report Card would not be possible without the cooperation of all the shoreline monitoring agencies in the state.

Heal the Bay believes that the public has the right to know the water quality at their favorite beaches, and is proud to provide Californians this information in an easy-to-understand format. We hope that California beachgoers will use the information as they use sunscreen SPF ratings: they should decide what they are comfortable with in terms of relative risk, and then make the necessary decisions to protect their health.

County health officials and Heal the Bay recommend that beach users should never swim or surf within 100 yards of any flowing storm drain, or in any coastal water during, and for three (3) days after, a rainstorm. Storm drain runoff can be the largest source of pollution to local beaches, flowing untreated to the coast and often contaminated with motor oil, animal waste, pesticides, yard waste and trash. After a rain, indicator bacteria counts usually far exceed state health criteria for recreational water use.

For more information, please log on to www.healthebay.org, or call 800 HEAL BAY.

Heal the Bay thanks the Ford Motor Company for their generous support of the Beach Report Card program and the publication of this report.





I N T R O D U C T I O N

The first Beach Report CardSM (BRC) Heal the Bay published in 1990 covered 60 plus monitoring locations from Leo Carrillo Beach to Cabrillo Beach. At the time, beachgoers knew little about the public health risks of swimming in polluted waters or the water quality at any of their favorite beaches in Los Angeles County. Beach water quality was a public issue only when a large sewage spill occurred. And although beaches were routinely monitored, the data was largely inaccessible to the public. Since then, much work has been done to address the issue of urban runoff and sewage spills at our local beaches. Numerous scientific studies, such as the Santa Monica Bay Restoration Project's Epidemiological Study on swimmers at runoff polluted beaches and the Southern California Coastal Water Research Project's Bight-wide shoreline bacteria and laboratory inter-calibration study, have been completed. Also, legislation, such as the statewide beach bathing water standards and public notification bill (AB 411), have been passed and implemented. And capital projects, such as the upgrade of the Hyperion Sewage Treatment Plant and several dry weather diversions, have been constructed. *In this same time period and with the help of the aforementioned, Heal the Bay's Beach Report Card has grown in coverage from Los Angeles County to all of Southern California, and is essential reading for the beachgoing public.*

The 11th Annual BRC summarizes the results of beach monitoring programs in San Diego, Orange, Los Angeles, Ventura and Santa Barbara counties from April 2000 to March 2001 and includes a review of a number of sewage spills which impacted recreational waters over the past year. In addition, this annual report investigates two key issues related to beach water quality: the type of bacteria indicators causing impairments to beach water quality; and the types of beaches (open coast, near storm drains, and in enclosed areas) which are likely to have polluted water. The information derived from these multiple analyses was used to develop future recommendations for solving water quality impairments at problem beaches.



This report also includes updates on issues that have an impact on beach water quality, such as legislation, regulatory programs, and scientific studies. The updates are followed by Heal the Bay's recommendations for the coming year for improving water quality and expanding public education.

Heal the Bay is excited to announce that the Beach Report Card will expand to cover the entire state of California. Beginning in June 2001, the Beach Report Card will cover more than 475 beaches from Del Norte County in northern California to the Mexican border. Heal the Bay is expanding the BRC with the hope that California beachgoers will use the information before they go to any beach in the state, in order to better protect their health and the health of their families. The weekly California Beach Report Card will be available in print and at the Heal the Bay web site at www.healthebay.org.

When going to the beach, the Beach Report Card should be used like the SPF in sunblock: beachgoers should determine what they are comfortable with in terms of relative risk, and then make the necessary decisions to protect their health.





Counties currently covered by the Beach Report Card.



T H E S O U T H E R N C A L I F O R N I A B E A C H R E P O R T C A R D

What Type of Water Quality Pollution Is Measured?

Runoff from creeks, rivers and storm drains is the largest source of pollution to Southern California beaches. Runoff may contain toxic heavy metals, pesticides, petroleum hydrocarbons, animal waste, trash and even human sewage. Currently, there are over 375 shoreline monitoring locations in the Southern California Beach Report Card that stretch from Santa Barbara County at Guadalupe Dunes to San Diego County at the Border Field State Park (border fence). The Beach Report Card includes only an analysis for fecal indicator bacteria of shoreline (ankle-deep) water quality data collected by various county and city public agencies . At present, the report card contains no information on toxins or trash at the beaches.

Shoreline water samples are analyzed for three indicator bacteria: total coliform, fecal coliform and enterococcus. Total coliform, which contains coliform of all types, originates from many sources such as soil, plants, animals and humans. Fecal coliform and enterococcus bacteria are found in the fecal matter of mammals and birds. This fecal matter does not necessarily come from humans, although numerous prior studies have demonstrated that there is a significant possibility of human sewage contamination in storm drain runoff at any given time.

The amount of indicator bacteria present in runoff, and consequently in the surf zone, is currently the best indication of whether or not a beach is safe for recreational contact. Indicator bacteria are not usually the microorganisms that cause bather illness; instead their presence indicates the potential for water contamination with *other* pathogenic microorganisms such as bacteria, viruses and protozoa that *do* pose a health risk to humans. The link between swimming in waters containing elevated levels of bacteria and human health risk was confirmed in the groundbreaking 1996 health effects study conducted by USC, the Orange County



Sanitation District, the City of Los Angeles, and Heal the Bay, under the auspices of the Santa Monica Bay Restoration Project (SMBRP).

Most sample locations are selected by health, regulatory, and other monitoring agencies to specifically target popular beaches and/or those beaches frequently affected by storm drain runoff. Water quality samples are collected by the appropriate agency at a minimum of once a week from April through October. Most agencies conduct year-round sampling, while others scale back their monitoring program from November through March.

Water Quality Thresholds

Concentrations of total coliform, fecal coliform and enterococcus bacteria are typically measured in colony-forming units (cfu) per 100 milliliters of ocean water. Colony-forming units are the number of bacteria in a given volume of ocean water that are capable of reproduction during the course of sample analysis. The Beach Report Card methodology utilizes four thresholds or specific levels of exposure that are associated with increased health risks. These thresholds were derived from California Department of Health Services standards set forth in AB 411 and findings from the 1996 SMBRP epidemiological study on swimmers at urban-runoff-polluted beaches. The four exceedance thresholds for various indicator bacteria can be found in Appendix A.

Heal the Bay's Grading System

Heal the Bay's grading system takes into consideration the magnitude and frequency of exceedance indicator thresholds over a 28-day period. Beaches that exceed multiple indicator thresholds on any given day receive lower grades than beaches that exceed just one indicator threshold.

BRC grades are based on a 100-point scale. For each monitoring location, points are subtracted from a perfect score of 100 points depending upon where the data falls within designated thresholds. As the magnitude or frequency of bacteria density threshold exceedance increases, the number of subtracted points increases. The threshold points and grading system can be found in Appendix A.

Water quality drops dramatically during and immediately after a rainstorm, but often rebounds to its previous level within a few days. For this reason, wet weather data is analyzed separately in order to avoid artificially lowering a location's



grade. A wet weather data point is any sample collected during or within three days of a significant rainstorm (precipitation more than or equal to one tenth of an inch (≥ 0.1 ")). Also, in response to requests from health agency officials, new to this year's BRC is an analysis of water quality data during the time period from April to October.

What Does This Mean to the Beach User?

Simply put, the higher the grade a beach receives, the better the water quality at that beach. The lower the grade, the greater the health risk. Potential illnesses include stomach flu, ear infection, upper respiratory infection and major skin rash (full body). The known risk of contracting illnesses associated with each threshold is based on a one-time, single day of exposure in polluted water (head immersed while swimming). Increasing frequency of exposure significantly increases an ocean user's risk of contracting any one of these illnesses.

It is important to note that the grades derived for the weekly Southern California Beach Report Card represent the most current available information and they may not represent real-time water quality conditions. Currently, laboratory analyses of beach water quality samples take 18 to 48 hours to complete. The data must then be entered into a database before it is sent to Heal the Bay for a grade calculation. However, the BRC on the Heal the Bay web site includes real time information on beach closures, as most closures are due to sewage spills and all health agencies close beaches immediately after a spill. The Beach Report Card is designed to give the beachgoer historical information on the water quality at a given beach; the public, in turn, can then make informed decisions about which beach to visit.

Why Not Test for Viruses?

A common question asked by beachgoers is "Since viruses are thought to cause many of the swimming-associated illnesses, why doesn't the health agency monitor directly for viruses?" Although virus-monitoring is incredibly useful in identifying sources of fecal pollution, there are a number of drawbacks to the currently available virus measurement methods. There have been tremendous breakthroughs in the use of gene probes to analyze water samples for virus or human specific bacteria, but currently these techniques are expensive, highly technical and not very quantitative. There are two virus-monitoring techniques for analyzing water samples: genetic and cultured. The genetic technique can be completed in less than a



day and is very sensitive to detecting a wide variety of viral pathogens. However, the tests are extremely expensive (\$1,000 per sample) and the results do not accurately quantify the number of viruses per unit volume, nor do they provide information on whether or not the virus is infectious. The culture technique is less costly (\$400 per sample) and can confirm whether or not a virus is infectious. Unfortunately, this technique is less sensitive in detecting specific viruses, is susceptible to water-quality-caused interference, and much slower in obtaining results (up to 6 weeks) (unlike bacterial indicator analyses, which only requires 18-48 hours). Finally, interpretation of virus-monitoring data is difficult because, unlike bacteria indicators, there is currently no data available that makes the link between health risks associated with swimming to certain virus concentrations. Therefore, indicator bacteria monitoring is currently the best, most timely and cost effective method for protecting the health of beachgoers. For every one water sample analyzed for viruses, 35–50 water samples can be analyzed for bacterial indicators at the same cost.



2000 - 2001 ANALYSES

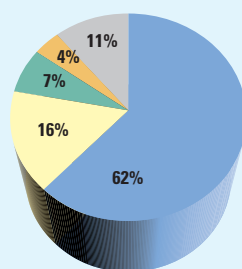
Southern California

The overall dry weather water quality at Southern California beaches this year was very good. Of the 375 water quality monitoring locations throughout Southern California, 293 or 78% of the monitoring locations during dry weather received good-to-excellent water quality marks (234 “A”s and 59 “B”s). This good-to-excellent rating is slightly lower, but comparable to last year's 82%. There were 82 locations that received fair-to-poor water quality marks (26 “C”s, 16 “D”s and 40 “F”s). A list of all grades can be found in Appendix B.

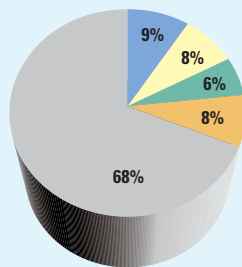
A number of Southern California beaches vied for the “Beach Bummer” crown this year (the monitoring location with the poorest dry weather water quality). The top 10 finalists were: Cabrillo Beach, harborside at San Pedro Bay in Los Angeles County (10th); Surfrider Beach at Malibu in Los Angeles County (9th); Avalon Bay Beach at Catalina Island in Los Angeles County (8th); Tijuana Slough (Tijuana River outlet) in San Diego County (7th); the Visitor's Center (projection of Clairemont Dr.) at Mission Bay in San Diego County (6th); Baby Beach at Dana Point Harbor in Orange County (5th); Pacific Beach at PB Point (downcoast of Linda Way) in San Diego County (4th); Doheny Beach at Dana Point in Orange County (3rd); Channel Islands Harbor

2000-2001 Annual Beach Report Card Overall Results

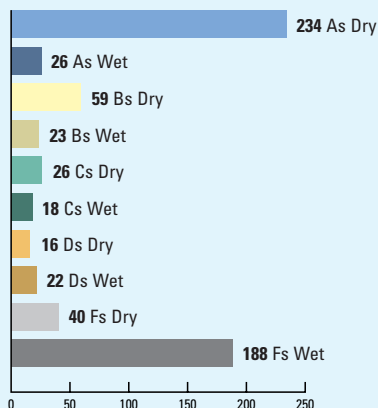
■ = A ■ = B ■ = C ■ = D ■ = F



Dry weather grades



Wet weather grades



Overall total combined dry and wet weather grades for 2000-2001.



Beach Park (Hobie & Kiddie Beach) in Ventura County (2nd). The winner of the dubious Southern California “Beach Bum” crown is Arroyo Quemada in Santa Barbara County. Finishing third for the title last year, Arroyo Quemada won the crown over Hobie/Kiddie Beach and Doheny Beach near San Juan Creek this year, because 73% of the monitoring days exceeded at least one fecal bacteria indicator, compared to 49% and 53% for the other two locations.

In addition to analyzing year-round dry weather water quality, Heal the Bay’s BRC includes grades for the AB 411 time-period, April through October. The results demonstrate that, for 2000-2001, data gathered during the summer was illustrative of the year-round dry weather results.

The perpetual disparity between dry and wet weather grades is significant again this year. This drastic difference in water quality is why Heal the Bay and public health agencies continue to recommend that no one swim in the ocean during and for at least three days after a significant rainstorm. Only a very few beach locations in Southern California escaped the influence of polluted, wet weather stormwater runoff. There were 228 locations that received fair-to-poor water quality marks (18 “C”s, 22 “D”s and 188 “F”s) with 68% of the monitoring locations receiving a grade of “F” during wet weather compared to only 11% during dry weather.

Of the 277 locations monitored, only 49 or 17% received good-to-excellent water quality marks (26 “A”s and 23 “B”s) during wet weather, considerably lower than the 78% for dry weather.

Heal the Bay commends the many agencies that continued their monitoring programs beyond the AB 411 required dates of April through October. This action provided approximately 20 additional weeks of water sampling, which meant beachgoers, particularly surfers going out for the winter swells, could continue receiving information about water quality and have the ability to make better health risk decisions about which beaches to visit.



THE BEACH REPORT CARD BY COUNTY

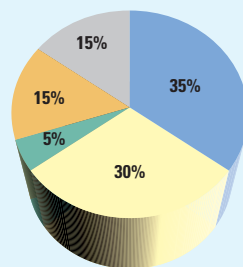
SANTA BARBARA

The County of Santa Barbara Environmental Health Agency routinely monitors 19 locations on a weekly basis, from Guadalupe Dunes (south of the Santa Maria River outside the City of Guadalupe) downcoast to Rincon Beach, north of the creek. Most samples are collected 25 yards north or south of the mouth of a storm drain or creek.

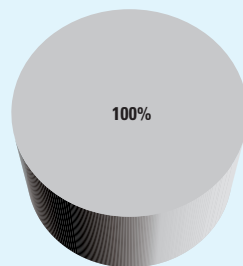
In 2000-2001, dry weather water quality at most beaches in Santa Barbara County was good. Of the 20 water quality monitoring locations, 13 received good-to-excellent water quality marks (seven “A”s and six “B”s). The cleanest beaches were Guadalupe Dunes, El Capitan State Beach, Sands, Leadbetter Beach, East Beach at Sycamore Creek, Butterfly Beach, and Carpinteria City Beach. There were seven locations that received fair-to-poor water quality marks (one “C”, three “D”s and three “F”s). Of this BRC’s six problem beaches, four of them are carry-overs from last year: Jalama Beach, Arroyo Quemada, Arroyo Burro Beach and East Beach at Mission Creek. However, it is interesting to note that East Beach at Mission Creek received an “A” grade for the summer months, but ended the dry weather year with a “D.” This season, Gaviota State Beach and

Annual Beach Report Card for Santa Barbara County

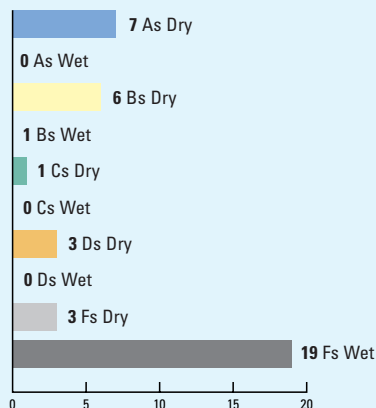
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Dry weather grades



Wet weather grades



Total combined dry and wet weather grades for Santa Barbara County.



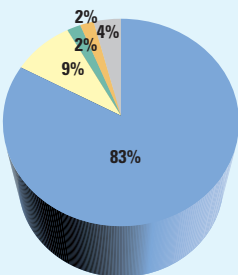
Refugio State were added to the list of problem beaches. Overall, this BRC’s good-to-excellent dry weather grade percentage of 65% was equivalent to last year’s percentage. A minor difference in dry weather water quality marks was the slight increase in the percentage of beaches receiving a “D” or “F.” This year 30% of the beaches received a “D” or “F” during dry weather, up 10% from last year.

Unfortunately, wet weather water quality in Santa Barbara County went from bad to worse. Last year 15 of the 19 monitoring locations received an “F” grade.

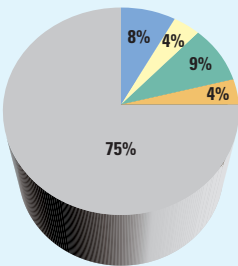
This year, all 19 locations received an “F.” Once again, with some of the largest waves occurring during wet weather, these results should serve as a warning to surfers who enter the water, during or within three days of a rain event.

**Annual Beach Report Card
for Ventura County**

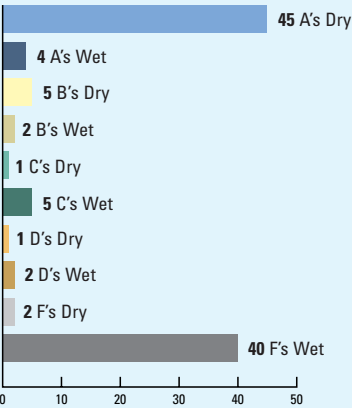
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Dry weather grades



Wet weather grades



Total combined dry and wet weather grades for Ventura County.

Sewage Spill Summary

There was one reported sewage spill in Santa Barbara County that led to a beach closure. An unknown quantity of treated sewage effluent occurred at Goleta Beach, which was closed from January 11–18, 2001.

VENTURA

The County of Ventura Environmental Health Division monitors 54 locations on a weekly basis from Rincon Beach south of the creek (near the Santa Barbara County line) to Staircase Beach, located at the north end of Leo Carrillo State Beach. Most samples collected in Ventura County are between 25 to 50 yards north or south of the mouth of a storm drain or creek.

For the second year in a row, the best overall dry weather water quality in Southern California is at Ventura County beaches. Of the 54 water quality monitoring locations, 50 (92%) locations received good-to-excellent water quality marks (45 “A”s and



five “B”s). Water quality improvements were seen at the two Ormond Beaches: J Street drain (“A”) and the Oxnard Industrial drain (“B”), which both received “C”s last year. Similar to last year, only four locations received fair-to-poor water quality marks (one “C,” one “D” and two “F”s).



Hobie Beach, Channel Islands Harbor

Also, two of the beaches most appealing to small children, Channel Islands Harbor at Hobie Beach (“F”) and Channel Islands Harbor at Kiddie Beach (“F”), had the poorest water quality in Ventura County (similar to last year). The two other beaches with dry weather



San Buenaventura Beach, at the Sanjon drain

water quality problems were Rincon Beach, 50 ft. south of the creek mouth (“D”), and San Buenaventura Beach, at the Sanjon drain (“C”).

Like all other counties this past year, Ventura County could not avoid poor water quality during wet weather conditions. Of the 54 monitoring locations, 11% received good-to-excellent water quality marks (four “A”s and two “B”s) during wet weather compared to 92% during dry weather. And 47 locations received fair-to-poor water quality marks (five “C”s, two “D”s and 40 “F”s), with 85% of the poor grades being “F”s.

Sewage Spill Summary

Ventura County had one sewage spill that led to a beach closure in the past twelve months. A spill of an unknown quantity occurred on March 5, 2001 in



the Ventura River, which affected a stretch of beach from Mandos Cove in the north to Marina Park in the south.

LOS ANGELES

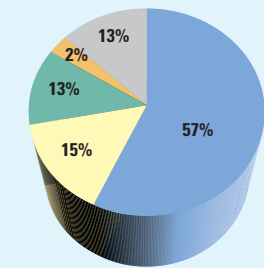
Shoreline

There are four agencies within Los Angeles County that contribute monitoring information to Heal the Bay's Beach Report Card: The City of Los Angeles

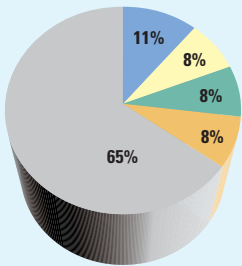
Environmental Monitoring Division at the Hyperion Sewage Treatment Plant monitors 20 locations on a daily basis; the Los Angeles County Department of Health Services monitors 30 locations on a weekly basis; the Los Angeles County Sanitation Districts monitors eight locations, six of which are monitored daily and two weekly; and the City of Long Beach Environmental Health Division monitors 20 locations on a weekly basis. Most samples collected are between 25 and 50 yards north or south of the mouth of a storm drain or creek.

**Annual Beach Report Card
for Los Angeles County**

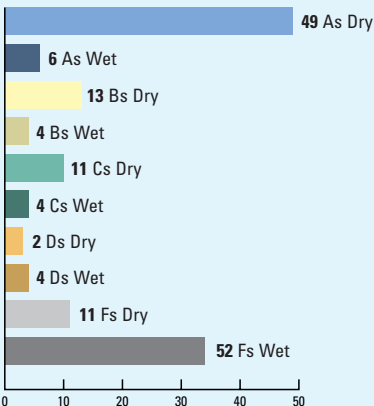
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Dry weather grades



Wet weather grades



*Total combined dry and wet weather
grades for Los Angeles County.*

Water quality at most Los Angeles County beaches was very good. Of the 86 locations monitored for water quality, 62 (72%) received good-to-excellent water quality marks (49 “A”s and 13 “B”s). This is slightly lower than the five-year average (1996-2001) for good-to-excellent marks of 77%. There were stretches of beach that had great water quality for beachgoers, namely Leo Carrillo to Puerco Beach in Malibu, Santa Monica Beach (projection of San Vicente to Venice City Beach at Topsail—except the Pico/Kenter storm drain); Dockweiler Beach (south of Ballona Creek through the South Bay to Cabrillo Beach Oceanside—except the Redondo Municipal Pier), Long Beach City Beach at Molino Ave. to Long Beach City Beach at 72nd Place



(except Granada Ave. and 54th Street); and most swimming locations within Alamitos Bay. A beach with a noteworthy water quality improvement was Santa Monica Pier, which went from a “D” grade last year to a “B” this year.



Manhattan Beach Pier

24 locations (28%) received fair-to-poor water quality marks (11 “C”s, two “D”s and 11 “F”s). Beaches that received the poorest grades (“F”s) were Surfrider and Big Rock Beaches in Malibu, Will Rogers Beach in Santa Monica Canyon, Cabrillo Beach (harborside at the Lifeguard tower), Long Beach City Beach at 3rd



Abalone Cove

Place, and Avalon Beach (except between Tuna Club and Busy Bee Restaurant) on Catalina Island. A beach with a noticeable decline in water quality was Mothers’ Beach in Long Beach, which received an “A+” last year and this year ended with a “C.”

Wet weather beach water quality in Los Angeles County was much like every other county in Southern California—very poor. During wet weather, 81% of the 52 monitored locations received a fair-to-poor water quality grade, of which 65% received an “F.” The breakdown of the fair-to-poor water quality marks are: four “C”s, four “D”s and 34 “F”s. 19% of the beaches received good-to-excellent water quality marks (11 “A”s and eight “B”s) during wet weather, compared to 72% during dry weather.



General Water Quality Trends for Santa Monica Bay

Heal the Bay analyzed trends for both dry and wet weather water quality for 61 Los Angeles County beaches (excluding Long Beach and Catalina Island because of lack of data) to determine how this BRC’s water quality fared compared to the five-year average. Based on Table 1, the overall picture of dry and wet weather water quality for Santa Monica Bay beaches in 2000-2001 can be labeled as an average year.

Table 1.
2001 Santa Monica Bay water quality compared to the five-year average (1996-2001)

| | As | Bs | Cs | Ds | Fs |
|------------------------|--------|-------|--------|-------|--------|
| 2001 dry grades (wet*) | 42 (6) | 6 (4) | 5 (4) | 2 (4) | 6 (34) |
| Five-year average | 40 (7) | 8 (4) | 6 (10) | 3 (8) | 4 (31) |

**The discrepancy in the number of dry weather grades and wet weather grades is due to a number of locations having been removed from the Los Angeles County Department of Health Services monitoring program.*

While public agencies continue to make strides that result in considerable improvements in dry weather water quality, wet weather water quality continues to suffer year after year.

Nearshore

For the past five years, Heal the Bay analyzed data at 20 nearshore monitoring locations (many of which are popular within the diving community) in Los Angeles County from April 2000 to March 2001. Samples are collected by the City of Los Angeles Environmental Monitoring Division and the Los Angeles County Sanitation Districts at a 30-foot deep contour of the Santa Monica Bay or at the edge of a kelp bed (where present), at 0.5 meters below the surface and at a depth within two meters of the sea floor. The City of Los Angeles monitors 11 locations from Westward Beach to Redondo Beach on a weekly basis, and the Los Angeles County Sanitation Districts monitor nine locations from Malaga Cove to Cabrillo Beach (oceanside) twice a week. All 20 locations are monitored for three indicator bacteria (total coliform, fecal coliform, and enterococcus).

Surface and Depth

Similar to previous years’ results, nearshore water quality for these 20 monitored locations was generally excellent during dry weather. Divers once again had reason



to smile at the near 20/20 results (20 “A”s for 20 monitoring locations) during dry weather for nearshore surface and depth water quality. The only location that did not receive an “A” grade was Venice Pier, which received a “B” for surface water monitoring.



Mothers' Beach, Marina del Rey

Nearshore water quality during wet weather improved this year compared to last. Only two of the 20 locations did not receive an “A” or “B” rating and unlike last year’s five “F”s, only one location received an “F.” Not surprisingly, that location was Ballona Creek, the largest and most polluted drain that flows into Santa Monica Bay.



Santa Monica Canyon at Will Rogers State Beach

Sewage Spill Summary

Although there were numerous sewage spills throughout the region this past year (April 2000 to March 2001), only six sewage spills actually led to beach closures. These six spills discharged approximately 375,000 gallons of sewage, the majority of which was due to one major spill that discharged approximately 360,000 gallons of sewage into Ballona Creek over one year ago.

ORANGE COUNTY

Four agencies within Orange County contribute monitoring information to Heal the Bay's BRC: the Aliso Water Management Agency monitors 16 locations



Crystal Cove



Seal Beach



Baby Beach, Dana Point Harbor

on a weekly basis; the Orange County Environmental Health Division monitors 95 locations (of which 55+ are covered in the BRC) on a weekly basis; the Orange County Sanitation Districts of monitors 17 locations 3 to 5 times a week; and the South East Regional Reclamation Authority (SERRA) monitors 17 locations on a weekly basis. Samples collected at beaches affected by a flowing storm drain, creek, or river are usually sampled at a distance of 83 yards north or south of the discharge location.

Overall, dry weather water quality at most beaches in Orange County was very good. Of the 102 water quality monitoring locations covered, 81 (79%) received good-to-excellent water quality marks (66 “A”s and 15 “B”s). And like Los Angeles County, Orange County



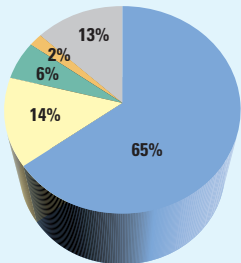
had stretches of beach with great water quality, namely Seal Beach at 1st Street to Huntington City Beach at Magnolia Street, Newport Beach at Orange Street to Dana Point at Dana Strand Beach, and San Clemente, north of the pier, to San Clemente Beach at Las Palmeras. As for water quality on the bayside (similar to last year), most locations within Huntington Harbour and Newport Bay were good-to-excellent, with the exception of 11th Street Beach in Huntington Harbour and Newport Dunes-North and 43rd Street Beach (second year in a row) in Newport Bay. The good news for Newport Dunes is that a summertime dry weather diversion will begin this year, which should improve water quality for beachgoers. Individual Orange County beaches that demonstrated improved water quality conditions were Seal Beach at 1st and 8th Street, and Huntington State Beach at the power plant, which improved from grades “D,” “C” and “D” respectively, to “B,” “A” and “B.”

There were 21 locations that received fair-to-poor water quality marks (six “C”s, two “D”s and 13 “F”s) in Orange County. Further breakdown of these 21 locations reveals that 14 of the poor water quality locations were attributed to two areas: a stretch from Doheny Beach to Dana Point (5000’ from SERRA’s south outfall); and a pocket beach in Dana Point Harbor called Baby Beach.

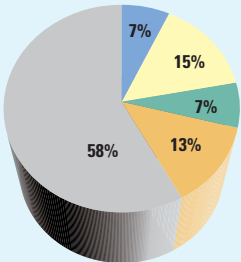
As for wet weather water quality in Orange County, there were 79 locations that received fair-to-poor water quality marks (seven “C”s, 13 “D”s and 59 “F”s), with 58% receiving an “F” during wet weather. 22% of the 102 locations received good-to-excellent water quality marks (seven “A”s and 15 “B”s) compared to 81% during dry weather.

**Annual Beach Report Card
for Orange County**

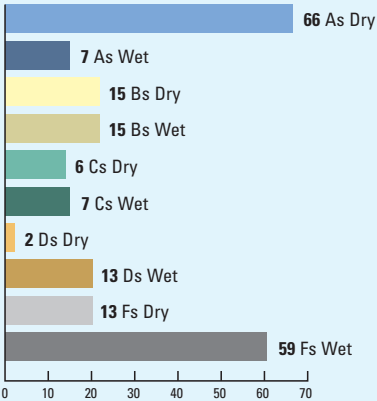
■ = A ■ = B ■ = C ■ = D ■ = F



Dry weather grades



Wet weather grades



*Total combined dry and wet weather
grades for Orange County.*



Sewage Spill Summary

Once again, Orange County had a high number of sewage spills this past year that led to a number of beach closures. A total of 37 sewage spills occurred that discharged more than 512,469 gallons of sewage runoff to Orange County beaches. Of these spills, six were “major” sewage spills of more than 10,000 gallons (totaling 478,032 gallons). And there were 31 “minor” spills (less than 10,000 gallons) which represented about 34,437 gallons of sewage.

SAN DIEGO

Six agencies in San Diego County contribute monitoring information to Heal the Bay's Beach Report Card: the Cities of Oceanside and San Diego, Encina Wastewater Authority, San Elijo Joint Powers Authority, San Onofre Generating Station, and the County of San Diego Environmental Health Services. (A majority of the 113 monitoring locations in San Diego are conducted by the City and County of San Diego.) Samples are generally collected at beaches affected by a flowing storm drain, creek or river, and are usually sampled directly in front of the discharge.

Overall, dry weather water quality at beaches in San Diego County was very good. Of the 113 water quality monitoring locations, 87 (77%) received good-to-excellent water quality marks (59 “A”s and 18 “B”s). San Diego County also had stretches of beach with great water quality, such as San Onofre State Beach at San Mateo Creek to Oceanside at Harbor Beach, Oceanside (projection of Surfrider Way to Leucadia at Beacons Beach) Swami's Beach in Encinitas to La Jolla Cove, and La Jolla, north of Nicholson Pt. to Coronado at Silver Strand. Within Mission and San Diego Bays, water quality varied from beach to beach, making it impossible to characterize the overall water quality (beaches located within enclosed bays tend to have reduced tidal circulation and are more susceptible to long-term pollution problems compared to open ocean facing beaches). Only 16 of 31 (52%) beaches within the bays received good-to-excellent water quality marks compared to 72 of 82 (88%) of the beaches located oceanside.

23 locations in San Diego County received fair-to-poor water quality marks (seven “C”s, six “D”s and 10 “F”s). Beaches in Mission and San Diego Bay accounted for a majority of these poor grades, having six of the seven “C”s, four of the six “D”s and five of the 10 “F”s. (The Tijuana Slough Natural Wildlife



Reserve affected several monitoring locations from Imperial Beach, the projection of Imperial Beach Blvd. to the Border Field State Park at the Border Fence.)

San Diego County fared no better during wet weather water quality than any other Southern California county—41 of 52 locations received fair-to-poor water quality marks (two “C”s, three “D”s and 36 “F”s), and 69% received an “F” grade during wet weather. Also, 21% of the locations monitored received good-to-excellent water quality marks (nine “A”s and two “B”s), compared to 77% during dry weather.

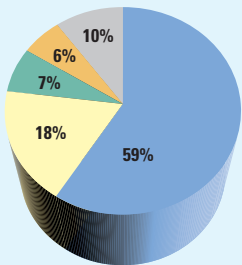
Sewage Spill Summary

San Diego County beaches suffered from the greatest number of sewage spills and volume of sewage spilled this past year (April 2000 through March 2001). There were 60 beach closures due to spills that discharged approximately 27,974,967 gallons of sewage to the ocean. A bulk of the volume can be attributed to the Tijuana River, which accounted for 30% of the total number of spills and 86% of the known volume spilled. The Tijuana River probably accounted for an even higher volume of sewage due to an additional 16 spills with no measured volume amount. Also, four spills occurred in Mission Bay that discharged 1,629,247 gallons of sewage. Another problem location was Ocean Beach at the San Diego River (Dog Beach)outlet, where eight spills discharged 51,190 gallons of sewage.

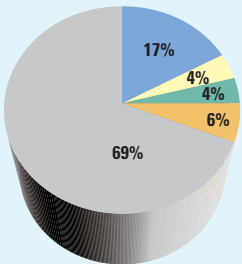
B E A C H P O L L U T I O N

Annual Beach Report Card for San Diego County

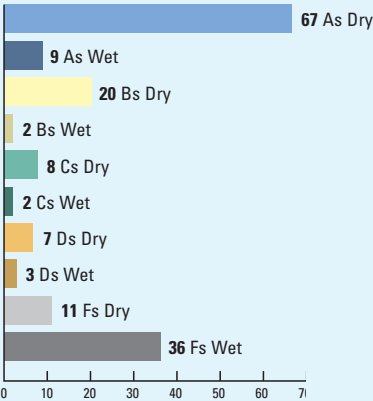
■ = A ■ = B ■ = C ■ = D ■ = F



Dry weather grades



Wet weather grades



Total combined dry and wet weather grades for San Diego County.





P A T T E R N S

Heal the Bay took a close look at all of the collected data to determine if there were Southern California-wide monitoring trends. Heal the Bay's first question was "Which types of indicator bacteria or combination of bacterial indicators were causing exceedances of the Beach Bathing Water Standards in samples collected during dry weather?" To answer this question, Heal the Bay compiled data from all Southern California counties from April 2000 through March 2001. The data from 21,100 beach sample days (the number of dry weather days at a total of 375 monitoring locations) was used for our analysis.

The results were that 91.4% of the beaches sampled and analyzed met State bathing water standards for all bacterial indicators. Only 8.6% of the beach sample days exceeded California ocean bathing water standards. Of the 8.6% (1,804), 48% (861) were caused by enterococcus, and 9.5% (172) were caused by fecal coliform. Water quality samples that exceeded two or more health standards also accounted for a significant percentage of the health standard exceedances: the combination of fecal coliform and total coliform to fecal coliform ratio accounted for 10.1%, and the combination of fecal coliform, enterococcus and total coliform to fecal coliform ratio accounted for 9.3%. A full breakdown of the percentages can be found in Appendix C.

The second analysis addressed the question, "Were there significant differences in water quality based on beach type?" For this, Heal the Bay divided all Southern California beaches into three categories: open ocean beaches, beaches adjacent to a storm drain (natural or concrete), and beaches located within enclosed waterbodies. Heal the Bay began by evaluating the Beach Report Card grades compiled for all Southern California counties. The grades were analyzed in three different time periods: dry weather "summer months" (from April-October), dry weather year-round, and wet weather year-round. Table 3 illustrates the grades by percentage during dry weather for both year-round and AB 411 (April to October) conditions.



Table 3.

Grades by percent relative to the type of beach during dry weather conditions

| Beach condition | As | Bs | Cs | Ds | Fs |
|----------------------|---------|---------|---------|---------|---------|
| Open ocean (AB411*) | 81 (85) | 8 (10) | 2 (3) | 5 (0) | 3 (2) |
| Storm drain impacted | 67 (68) | 15 (14) | 7 (9) | 2 (4) | 9 (6) |
| Enclosed beaches | 37 (42) | 23 (23) | 9.5 (8) | 9.5 (8) | 21 (19) |

**Heal the Bay included the AB411 time period of April through October at the request of public health agencies.*

The results demonstrating that water quality at open ocean beaches is substantially better than those beaches impacted by storm drains are hardly surprising because storm drains are known sources of high indicator bacteria densities. In general, the worst water quality is found at enclosed beaches, probably because of the poor water circulation that is often associated with these areas. Approximately 40% of enclosed beaches received poor water quality grades as opposed to 18% and 10% of beaches impacted by storm drains and open ocean locations, respectively. The most surprising result was not that storm drain-adjacent beaches had poorer water quality than open-ocean beaches, but rather that enclosed beaches were such high frequencies of health standard exceedances relative to the other two beach types.

These results also demonstrate that there was not a substantial difference (varying only between one and five percent) between year-round dry weather quality and beach water quality during the “summer-AB 411” months.

Table 4 demonstrates the grades by percentage for wet weather conditions.

Table 4.

Grades by percent relative to the type of beach during wet weather

| Beach condition | As | Bs | Cs | Ds | Fs |
|----------------------|----|----|----|----|----|
| Open ocean | 21 | 21 | 6 | 11 | 40 |
| Storm drain impacted | 9 | 7 | 8 | 10 | 66 |
| Enclosed beaches | 2 | 3 | 2 | 0 | 93 |

Once again, open ocean beaches had the best water quality, and both storm drain impacted and enclosed beaches had miserable water quality during wet weather, where enclosed beaches flunked an astounding 93% of the time.



State and Federal Legislation Update

There are a number of state and federal bills that could inform the public on the health risks associated with swimming in polluted water, and/or help mitigate the polluted urban runoff problem that plague many Southern California beaches. This section will highlight a few of these pending bills.

FEDERAL

RECAP—Beach Bill and USEPA’s BEACH Program

The U.S. Environmental Protection Agency (EPA) established the BEACH Program in 1997 with the goal of significantly reducing the risk of waterborne illnesses at the nation’s beaches and recreational waters through improvements in recreational water protection programs, risk communication, and scientific advances. Over the past few years, the EPA has completed a number of national surveys on beach monitoring and closures and has found that nearly 25% of all beaches had an advisory or closure in 1998 due to contamination. The survey results confirmed that a wide variety of water quality standards at beaches are being used across the country to determine if a beach is safe for swimming and that beach monitoring programs vary greatly in design. Although the EPA’s BEACH program is a step in the right direction, the surveys have highlighted the fact that until National Bathing Water Standards are established, many beach monitoring programs across the country will continue to provide inadequate protection of public health.

To this end, last year Congress passed the Beach Bill. Sponsored by Representative Bilbray, (R – San Diego) and Senator Lautenberg, (D – New Jersey), the Beach Bill requires the establishment of minimum water quality standards for public beaches nationwide. The bill now requires states to develop beach water quality monitoring and public notification programs. As previously stated, beach water quality monitoring and public notification practices vary considerably, from county to county and state to state, at beaches and other recreational waters. Once in place, these national standards will ensure that beach water quality monitoring standards and public notification programs adequately protect public health regardless of the beach location. Other than federal funding, the bill will probably have little impact on California because of California’s comprehensive bathing water standards, monitoring and risk communication requirements.



The EPA now has the directive and is currently in the process of drafting nationwide guidelines for water quality monitoring and public notification programs, to address the Beach Bill requirements and the shortcomings highlighted in their own surveys. A document for public review is expected to be available in the summer of 2001.

STATE

Clean Beaches Initiative

This year, Governor Davis proposed \$100 million in the state budget for protecting and restoring the health of California's beaches. Approximately \$70 million is directly allocated for capital projects to improve water quality at popular polluted beaches over the next two years. An additional \$20 million is earmarked for much needed research on rapid pathogen indicators and pathogen source identification efforts. The final \$10 million is allotted for coastal wetland restoration.

The Clean Beach Initiative is an investment intended to protect an economic and environmental resource and must be enacted. However, the Legislative Analyst Office (LAO) has recommended this fund be cut from the budget, citing to taxpayers the "cost of the energy crisis." This is a curious decision given that coastal tourism generated more than \$19 billion in 1998 to California's economy through recreation activities, not to mention that in 1999 there were more than 3,558 beach advisories and closures in California. (Clearly, the LAO ignored the recreational opportunities lost and economic consequences suffered in Huntington Beach in 1999 and 2000.) The Clean Beach Initiative is broadly supported by health agencies, coastal cities and counties, researchers from numerous California universities, and the environmental community. The Legislature needs to immediately reinstate all allocated funds to implement the Governor's Clean Beach Initiative. A non-partisan issue, beach protection and revenue benefit all constituents in a district—human and marine life alike. Besides, when there are rolling blackouts this summer, millions of people will beat the heat by escaping to the beach. It would be great if people weren't greeted by health warning and beach closure signs once they get there.



SB 72

Proposed SB 72, authored by state Senator Sheila Kuehl and sponsored by Heal the Bay, would require the State Water Resources Control Board to develop a uniform stormwater monitoring program for regulated municipalities and industries under the National Pollutant Discharge Elimination System. The elements of the standardized stormwater monitoring program include:

- Standardized methods for collection and analysis of stormwater and dry weather runoff samples to ensure that all data is consistent and comparable statewide.
- A minimum monitoring program for industrial and municipal stormwater dischargers that includes standard sampling intervals and frequencies; monitoring for specified pollutants; minimum detection limits; annual reporting requirements; and assessments of pollutant loads, efficacy of best management practices (BMPs) and impacts to receiving waters.
- A requirement that each discharger implement a monitoring program which includes, at a minimum, all components of the minimum monitoring program developed pursuant to this bill, by January 1, 2003.
- A requirement that each discharger conduct water quality sampling at least five times per rainy season to provide a meaningful assessment of individual sources and pollutants.

The bill also requires Regional Water Quality Control Boards to summarize the results of the stormwater monitoring programs in their jurisdictions beginning in 2004. Finally, since stormwater pollution is site specific, the bill would prohibit group monitoring by industrial facilities. Group monitoring currently makes it difficult to assess water quality impacts of individual facilities or the effectiveness of site-specific best management practices.

AB 1192

AB 1192, proposed by state Assemblymember Fran Pavley, would create the Water Quality and Watershed Protection Act. The Act, administered through various State Agencies, would fund specific programs targeting water conservation, the expansion of groundwater storage and recharge programs, treatment and/or management of stormwater runoff, protection of drinking water supplies, water recycling, characterizing the potential public and environmental hazards of



chemical constituents in water and their removal, volunteer monitoring, and riparian clean-up and restoration. These programs would be funded through voter-approved bonds.

AB 639

Authored by Assemblymember Frank Nakano, AB 639 would require the State Water Resources Control Board (SWRCB) to select three beaches impacted by storm drains that have high closure rates to participate in a pilot program. The pilot program is intended to test the effectiveness of best management practices in reducing contamination levels at those beaches. The SWRCB would be further required to monitor the program for a minimum of one year, and produce results and findings by January 1, 2004.

AB 15

State Assemblymembers Thomas Harman and Patricia Bates are advocating AB 15 which is designed to provide grants to public agencies to pay for capital costs (specified other costs) associated with diverting dry weather flows from public beaches to sewage treatment facilities. The State Water Resources Control Board, in consultation with the state's Stormwater Quality Task Force, will be required to administer the grant program and complete a study identifying measures that will reduce or eliminate violations of beach bathing water standards by January 1, 2004.

AB 285

Proposed AB 285, by state Assemblymember Howard Wayne, would standardize reporting for uniform overflow events and sanitary sewer system discharges by January 1, 2003. Based on the data collected, the SWRCB would be required to compile a sanitary sewer system overflow database. That would contain such information as sewage volume spilled, cause of the spill, location, date, duration of the spill event, affected waterbodies and beaches, beach closures, corrective action implementation, and collection system ownership.

RECAP—AB 538

Another piece of legislation by Assemblymember Howard Wayne (and sponsored by Heal the Bay) was AB 538. Written last year, it requires the State to develop protocol for identifying sources of fecal indicator bacteria at high-use beaches that are impacted by flowing storm drains. Dr. Michael Stenstrom, a UCLA civil engineering



professor and one of our nation's leading experts on stormwater, has been contracted by the State Water Resources Control Board, to develop the protocol, which will include a decision tree for implementing existing source identification methods based upon the relative risk of potential sources. Importantly, the protocol will identify new tools for source identification including the potential use of alternative types of indicators of human sewage, and the sanitary survey protocol must be finalized in 2001. This will be a critical tool for the RWQCB and contributing cities to reduce bacteria loading in Santa Monica Bay, in order to meet the requirements of the coliform Total Maximum Daily Load (TMDL) scheduled for implementation in 2002. A statewide protocol for identifying sources of bacteria at beaches is critical to the management of beach contamination in California, as illustrated by the more than two years of Huntington Beach contamination investigations which could reach a total of \$5 million this summer.

RECAP—AB 885

Authored by Assemblymember Hannah-Beth Jackson, and signed by Governor Davis last year, AB 885 requires the development of statewide standards for the permitting and operation of onsite sewage treatment systems to be established by 2004. The bill requires the State Water Resources Control Board to consider minimum construction, siting and performance requirements as conditions to permitting a discharge from an onsite sewage treatment facility. Also, AB 885 allows the individual Regional Water Quality Control Boards and local governments to adopt even more protective standards for their areas, especially onsite systems that could potentially impact receiving waters.

In a far-reaching regulatory action, the Los Angeles Regional Water Quality Control Board adopted general waste discharge requirements (WDR) for small commercial and multifamily residential subsurface sewage disposal systems in Los Angeles and Ventura counties in February 2001. This WDR applies to those septic systems discharging less than 20,000 gallons per day. The WDR requires existing and new dischargers to develop a monitoring and reporting program for a number of constituents including nutrients and fecal bacteria indicators, develop a spill response plan, and ensure that no portion of the seepage pit or leach field extends to within five feet of the water table under any circumstance (those facilities with leach fields or seepage pits within 5 to 10 feet of the water table must provide the equivalent of disinfected secondary treatment to their wastewater). In



addition to these requirements, the WDR prohibits the installation or construction of an onsite system within 150 feet of any water well, or within 100 feet of any stream, channel, watercourse, or waterbody. Once the regional board issues this WDR, the positive impact on water quality in the Los Angeles region will be substantial.

These two actions stem from years of septic pollution to groundwater, nearby waterways and beaches creating public health risks to drinking water supplies and recreational water activities. Numerous studies have been conducted that implicate improperly designed, constructed or operated onsite sewage systems as major culprits in excessive nutrient and bacterial loadings to California ground and surface waters.



U P D A T E S A N D R E C O M M E N D A T I O N S

Storm Drain Plume Dispersion Study

In 1999, 81% of all beach closures in California were due to storm drains directing contaminated runoff across the beach and into the surf zone. The length of beach that is polluted by a flowing storm drain that leads to bacteria levels exceeding the state health standards is unknown. A rule-of-thumb of 50 to 100 yards is currently used to determine how much of the beach around a storm drain is unsafe for swimming. However, beach storm drain studies have indicated that much longer sections of beaches can be impacted by storm drain water.

To address this issue, Heal the Bay is working with the Southern California Coastal Water Research Project (SCCWRP) on a storm drain plume dispersion study. The goal of the study is to develop a predictive model for estimating the length of beach around a flowing storm drain that is unsafe for swimming. This study is the first comprehensive investigation into the key parameters that dictate dispersion of microbiological contamination from storm drains in the surf zone, and is a multi-agency collaboration with the Regional Water Quality Control Board and the City of Los Angeles. Heal the Bay's role is to develop a statistical model of key predictive parameters of bacteria dispersion along the beach. Already, Heal the Bay has conducted approximately 48 sampling events at Santa Monica Bay beaches adjacent to three contaminated storm drains. The end product of this study will be an accessible, easy-to-use predictive tool for lifeguards and health officials to use on a routine basis to assist in determining how much of the beach around a flowing storm drain in Santa Monica Bay is unsafe for swimming. The study will be released by the end of 2001.

Statewide Expansion of the Beach Report Card

Beginning in June 2001, the Beach Report Card will grade beaches throughout the entire state of California. San Luis Obispo, Monterey, Santa Cruz, San



Mateo, San Francisco, Marin, Sonoma, Mendocino, Humboldt, and Del Norte Counties will be added to the California Beach Report Card. As of June, Heal the Bay will be grading approximately 500 beaches on a weekly basis, and will be included in next year's annual report. The California Beach Report Card will provide weekly water quality information for new locations in such areas as Bodega Bay, Dillion, Stinson, Muir, Pacifica, Half Moon Bay, Natural Bridges, the Santa Cruz Boardwalk, Capitola, Pacific Grove, Carmel, Pismo State Beach, and Morro Bay City Beach.

This information will now be available to beachgoers in one comprehensive location: Heal the Bay's web site. The Beach Report Card web page will include a map of California showing the participating counties, detailed maps for each participating county, notification on sewage spills and beach closures, an historical archive of past water quality grades and monitoring locations (represented by dots on the detailed maps) with different colors denoting the grade of the beach (blue= "A"/"B", yellow= "C", red= "D"/"F") and flashing icons indicating a beach closed due to a sewage spill.

Enclosed Beaches

For a number of years, Heal the Bay expressed concern about the poor dry weather water quality conditions at a number of beaches within enclosed bays and harbors in Los Angeles County. The advent of AB 411 demonstrated that this concern was not limited to Los Angeles County—that Ventura, Orange, and San Diego Counties experienced similar problems at their enclosed beaches. Most of these beaches are designed with children in mind, where, protected from the waves, they can swim in pool-like conditions. The irony is that these beaches have the poorest overall water quality. A number of sources are responsible for contributing to the contamination of these beaches, and the lack of tidal circulation and wave action allows the fecal pollution to remain for extended periods of time, making things much worse. Poor tidal circulation is the unifying thread for poor water quality at enclosed beaches like Baby, Kiddie, and Mothers' beaches.

Below is a brief summary of the work underway at a number of enclosed beaches:

Kiddie and Hobie Beaches (Ventura County): Nestled within the Channel Islands Harbor, these two beaches have exhibited poor water quality since the inception of the State's Beach Bathing Standards in 1998. In response, the County of



Ventura Environmental Health Department expanded their monitoring program in area coverage and frequency to determine the scope of the problem. Also, the County of Ventura Flood Control Department implemented a number of measures in an attempt to identify and



Kiddie Beach, Channel Islands Harbor

eliminate potential sources of pollution at the beach, including diverting the dry weather runoff flows away from the beach to the local sanitary sewer line, installing devices to dissuade birds from roosting and implementing a program to capture and relocate feral cats, and increasing the frequency of beach clean-ups. Yet the pollution problem remains. The County subsequently hired a contractor to characterize the factors causing or contributing to pollution at the beach, and to make recommendations on how to further mitigate those factors. The contractor ran a number of studies to determine sources of pollution (spatial and temporal patterns) and tidal hydraulics analysis. The contractor made four recommendations: continue diversion of the dry-weather flows; improve the water circulation in the nearshore area; increase and improve litter control efforts; and increase and improve the beach warning signs. The county has since applied for a number of grants to fund a tidal circulation study designed to identify a project that would provide the greatest circulation conditions without threatening the harbor with increased storm damage risks. Clean Beach Initiative funding is critical for implementing a solution to the problems at Kiddie Beach.

Mothers' Beach, Cabrillo Beach, and Avalon Bay (Los Angeles County): Mothers' Beach in Marina del Rey has long been a low point in Heal the Bay's BRC. This beach best exemplifies the concern with enclosed beaches—the uncertainty of water quality conditions at any given moment due to a lack of tidal circulation. Much work has been done to address the potential sources of pollution to this beach, such as aeration-mechanism to improve circulation, anti-bird roosting



devices (mono-filament line across a portion of the beach and roost-proof buoys), limiting the swimming area, and extensive sampling. However, none of the mechanisms have mitigated the continued fluctuations in water quality conditions. Add the lack of certainty about overall water quality at Mothers' Beach with the County of Los Angeles' indefensible withdrawal of all monitoring at Mothers' Beach (the County monitored two locations until recently), and the public is left with a false sense of safety about water quality conditions.

Fortunately, the Los Angeles County Department of Beaches and Harbors is actively working to obtain funds for two projects designed to increase water circulation and remove the old sand (thought to be a potential source of bacteria) and replace it with clean sand. Once again, Clean Beach Initiative funding is needed to ensure that projects at Mothers' Beach, Cabrillo Beach and Avalon are implemented as quickly as possible to protect children and swimmers.

Cabrillo Beach, harborside, at San Pedro in the Port of Los Angeles, is the only beach that the City of Los Angeles calls its own. Cabrillo Beach has long been a popular beach with kids and parents due to the many amenities provided, including the Cabrillo Marine Aquarium, picnic area, boat launch, playground, swimming pool-like water conditions (no waves) and ample parking. Unfortunately, Cabrillo Beach has also been one of the most polluted beaches in all of Los Angeles County for the past 10 years. Compounding factors, such as a large bird population, lack of tidal circulation, ever-increasing shoaling of sand near the breakwater, and the lack of a targeted public education campaign to the principal users, allows Cabrillo Beach to pose substantial health risks to a diverse population of beachgoers. However, the City of Los Angeles has recently begun to focus attention on addressing the water quality problems and public health concerns at Cabrillo Beach. The City expanded its monitoring program with the hope of determining identifiable sources that could be remediated. They also installed anti-bird devices (similar to Mothers' Beach), increased the number of trash receptacles, and are currently considering installing an on-the-beach water recreational feature for kids as a short-term solution until the ocean water quality problem is resolved. In addition to the proposed alternative recreational water facility, the City of Los Angeles is looking to remove sand along the breakwater from the western portion of the beach to Cabrillo Pier, hoping that this will improve water circulation. The long-term solution to poor water quality at Cabrillo Beach is to improve the tidal circulation. To this end, the Port of Los



Angeles is undertaking a “flow circulation study” with the Army Corps of Engineers (California Coastal Commission requirement for one of their projects) to determine if infilling activities within the Port of Los Angeles have led to a decrease in the velocity of water circulation at



Cabrillo Beach, harborside at lifeguard tower

Cabrillo Beach. Based on the results, the Port and the Army Corps will be able to assess the feasibility of a number of alternatives designed to increase circulation at Cabrillo Beach through creating openings in the breakwater (conduits or pipelines for example). If successful, this project would utilize the wave energy from the ocean outside the breakwater to facilitate water mixing harborside at Cabrillo Beach.

Avalon Harbor Beach is located on Santa Catalina Island and is a popular beach for mainland visitors. Twenty-two miles offshore, visitors can get away and feel as though they are far from the hustle and bustle of Los Angeles. However, Avalon Bay does not escape the same shoreline water quality problems that plague the mainland. Only recently (1999), with the advent of AB 411, did public agencies and beachgoers realize the poor water quality conditions at the beaches within Avalon Harbor. The City of Avalon quickly initiated a number of measures to identify the sources and remediate them by diverting flowing storm drains, roost-proofing (preventing birds from residing) the underside of the pier, and requiring dye tablets for all boats coming into the harbor. However, water quality problems continue despite the numerous efforts by the City. An assessment of current harbor circulation patterns and source identification efforts must occur before a feasibility study can be undertaken to develop a viable solution to Avalon’s water quality problems.

Baby Beach (Orange County): Tucked away in Dana Point Harbor, adjacent to West Basin, Baby Beach offers parents a safe place, protected from waves and rip-currents,



to take their kids. However, beach water quality has been poor at this location even after the onset of AB 411 monitoring requirements. All four monitoring locations at Baby Beach have received poor grades over the last two years. Orange County agencies have implemented a number of projects to improve water quality conditions such as diverting nearby summer dry weather flows to the local sanitation district, installing bird control measures to reduce roosting areas, posting educational signs for people to stop feeding the birds, and controlling and reducing irrigation runoff. Despite these measures, the beaches continue to have poor water quality.

Mission Bay (San Diego County): Like so many other marinas and harbors in California, Mission Bay was once an extensive estuarine wetland system at the mouth the San Diego River. The numerous sheltered swimming areas within the bay have continually been affected by poor water quality. As was highlighted in the San Diego County section of this report, a majority of the water quality problems at beaches within San Diego County are found in Mission Bay. The sources of pollution are abundant, including sewage spills, boating, fishing, natural inputs, and runoff (from Tecolote and Rose Creek). The problems are augmented by poor tidal flushing and water circulation. The City of San Diego has taken a number of steps to address some of the problems: dry-weather runoff flow diversions of 101 storm drains from Mission Bay to the sewer system; aged sewer infrastructure replacement in the nearby areas of Mission Bay, and permanently posted warning signs at all drains within Mission Bay. The City of San Diego proposed other projects within the Mission Bay watershed for funding under the Clean Beach Initiative. The San Diego Regional Water Quality Control Board (SDRWQCB) is in the process of garnering \$976,000 to fund a study of human pathogens, specifically viruses, within Mission Bay. Also, the SDRWQCB is considering a supplemental environmental project that would direct funding toward a health effects study of recreational users in Mission Bay. Finally, the SDRWQCB is developing a coliform Total Maximum Daily Load for the Mission Bay watershed.

Fecal Total Maximum Daily Loads

The Los Angeles Regional Water Quality Control staff is currently developing a number of fecal bacteria (Pathogen) Total Maximum Daily Loads for the Malibu Creek Watershed and Santa Monica Bay. A TMDL is the maximum amount of a pollutant, in this case fecal bacteria, that a water body can receive and still meet water quality standards. The fecal bacteria TMDLs should be com-



pleted and presented to the RWQCB for a vote by the end of 2001. This is the result of a 1998 consent decree entered into between Heal the Bay, NRDC, the Santa Monica BayKeeper and the EPA. The TMDL should finally move us from the rhetoric of ‘swimmable waters’ to the reality of clean rivers and beaches.

Dry Weather Low-flow Diversions

City and County of Los Angeles: Heal the Bay has actively participated in the City of Los Angeles’ Beach Water Quality Advisory Group (BWQAG) since its inception. The group focuses on prioritizing drains for low-flow diversions. The city has already diverted the dry-weather flows from beaches at Bay Club Drive, Thorton Avenue, and Venice Pavilion. Drains scheduled for diversions in the coming year (2001-2002) are Temescal Canyon, Palisades Park, Imperial Highway, and Santa Monica Canyon. Will Rogers Beach at Santa Monica Canyon has been one of the five most polluted beaches in LA County in the past decade and has been Santa Monica Bay’s highest priority diversion for the last six years.

This past year, LA County successfully completed diversions of five drains: Alamitos Bay in Long Beach; Herondo storm drain in Redondo Beach; Ashland Avenue in Santa Monica, Pershing Avenue in Playa del Rey; and Brooks Avenue in Venice. Due to the diversion, Ashland Avenue, a longtime “D” or “F” beach, received an “A” grade for the first time in the history of the Beach Report Card.

City of Santa Monica: The Cities of Santa Monica and Los Angeles partnered to construct the Santa Monica Urban Runoff Reclamation Facility (SMURFF) to treat dry and wet weather runoff flows year-round. The facility will treat flows of up to 500,000 gallons per day with a treatment train that includes a continuous deflective separator, dissolved air floatation, microfiltration, and UV disinfection. The runoff reclamation facility is the first of its kind in the country. In operation since May 3, 2001, this facility treats runoff from the Pico/Kenter and Santa Monica Pier storm drains. The treated water is then reused for non-potable uses throughout the City of Santa Monica. Larger flows will continue to be discharged to the Bay untreated.

Recommendations for the Coming Year:

- **Advocate for full funding of the Clean Beach Initiative.** All other recommendations are trivial by comparison. Heal the Bay will advocate for full funding for the projects that will result in the greatest protection of public health.



- **Advocate for Los Angeles County Department of Health Services to resume weekly water quality monitoring at Mothers' Beach in Marina del Rey.** Since September 2000, the County has ceased all shoreline monitoring within Mothers' Beach, relying solely on the City of Los Angeles' single sample location. As has been demonstrated in past years, water quality conditions at Mothers' Beach can vary significantly within a short distance. By reducing the total number of samples collected and beach area covered, Health Services has, in effect, robbed the public of the right to know about water quality conditions, and their ability to make an informed decision about attending that beach.
- **Advocate for the United States Environmental Protection Agency (USEPA) to incorporate California's Beach Bathing Water Standards and Public Notification Protocols into a nationwide program.** The USEPA is currently drafting a nationwide water quality and public notification program. A necessary component of USEPA's program is California's statewide beach bathing water monitoring and public notification program. Also, the USEPA must utilize the wealth of technical experts on water quality monitoring issues and public notification protocols in Southern California to assist in crafting the nationwide program.
- **Increase Best Management Practices at enclosed beaches and consider tidal circulation improvements to reduce bacterial indicator densities.** Beaches such as Kiddie Beach in Channel Islands Harbor, Mothers' Beach in Marina del Rey, Cabrillo Beach in Los Angeles Harbor, Mothers' Beach in Long Beach and Baby Beach in Dana Point Harbor all received fair to poor water quality marks. Whether the pollution problem is due to the lack of tidal circulation or the beach's proximity to a pollution source, young beachgoers are far too frequently exposed to unhealthy water quality conditions. One of Heal the Bay's highest priorities for the year is to ensure that these chronically polluted beaches are cleaned up.
- **Continue advocating for consistent implementation of AB 411 monitoring and public notification programs.** For instance, the County of Los Angeles has a monitoring program based on sampling 50 yards from a flowing storm drain—compared to the County of San Diego, which monitors water quality in front of the discharge. This means that an "A" beach in San Diego could be cleaner and safer than an "A" beach in Los Angeles. Agencies know that comparing these two programs is like comparing apples to oranges, but the public does



not. Heal the Bay will continue to recommend that a standardized monitoring distance protocol (e.g., 25 yards from a flowing storm drain) be established as soon as possible.

- **Continue encouraging monitoring agencies to monitor water quality at popular beaches year-round (beyond the AB 411 required dates of April-October).** Year-round monitoring provides beachgoers, specifically surfers who frequent the beach due to winter swells, with important information about water quality.





A C K N O W L E D G E M E N T S

This report and the entire Beach Report Card program would not be possible without the cooperation and professionalism of the staff members at the many monitoring agencies throughout Southern California. These agencies include the County of Santa Barbara, Environmental Health Services; the County of Ventura, Environmental Health Division; the City of Long Beach, Department of Health & Human Services, Division of Environmental Health; the County of Orange, Health Care Agency, Environmental Health Division; the Orange County Sanitation District and the County of San Diego, Department of Environmental Health, Land and Water Quality Division. Charlie McGee at the Orange County Sanitation Districts has been particularly helpful in analysis of the data.

Heal the Bay would like to especially thank the City of Los Angeles Environmental Monitoring Division, the Los Angeles County Department of Health Services and the Los Angeles County Sanitation Districts for their cooperation since the inception of this pioneering program 11 years ago.

Public awareness of the Beach Report Card program is in large part due to the generosity of many in the ocean-enthusiast and public education communities who post Beach Report Card information on their premises.

A special thank you to the Ford Motor Company for their continued generous support in funding the Beach Report Card program and the publication of this report.





A P P E N D I X A

Each threshold is based on the prescribed standards set in the California Department of Health Service's Beach Bathing Water Standards. The magnitude of the water quality threshold exceedance and laboratory variability was addressed by the inclusion of standard deviations in setting the thresholds. The standard deviations used were developed during the 1998 laboratory inter-calibration study led by the Southern California Coastal Waters Research Project and the Orange County Sanitation Districts that involved over 20 shoreline water quality monitoring agencies in Southern California.

TABLE A-1. Bacterial Indicator Exceedance Thresholds in cfu/100ml.

| Group: | 1 T - 1 s.d. ¹ | 2 T + 1 s.d. | 3 > T + 1 s.d. | 4 very high risk |
|---|------------------------------|-----------------------------------|-------------------|---------------------|
| Total Coliform | 6,711-9,999 | 10,000² -14,900 | >14,900 | na |
| Fecal Coliform | 268-399 | 400 -596 | >596 | na |
| Enterococcus | 70-103 | 104 -155 | >155 | na |
| Total to Fecal Ratio (when: Total > 1,000) | 10.1-13 | 7.1-10 | 2.1-7 | < 2.1 |

1) s.d.—standard deviation

2) Bold numbers are the State Health Department standards for a single sample.

The number of points subtracted from 100 for total coliform, fecal coliform, and enterococcus are: **6 points** for bacterial densities falling in group one (threshold minus one standard deviation or T – 1 s.d.), **18 points** for group two (T + 1 s.d.), and **24 points** for group three (indicator densities > T + 1 s.d.). The point system for total to fecal ratio is: **7 points** for group one, **21 points** for group two, **35 points** for group three, and **42 points** for group four (very high health risk). Exceedance of the total to fecal ratio threshold leads to lower grades because exposure to water with low ratios causes an even higher inci-



dence of a variety of adverse health effects relative to the health risk associated with the other bacterial indicators.

TABLE A-2. Threshold Points

| Group: | 1 T - 1 s.d. ¹ | 2 T + 1 s.d. | 3 > T + 1 s.d. | 4 very high risk |
|---|------------------------------|-----------------|-------------------|---------------------|
| Total Coliform Fecal Coliform Enterococcus: | 6 | 18 | 24 | |
| Total to Fecal Ratio: (when: Total > 1,000) | 7 | 21 | 35 | 42 |

1) s.d.—standard deviation

These points are added to obtain a subtotal for that week. The point subtotal for the most current week’s worth of data is multiplied by 1.5 in order to give it more weight. Then the points from the previous three weeks are added in for an overall point total. The total number of points for the 28-day period is divided by the average number of samples collected in a week. This number is then subtracted from the original 100 points to obtain a grand total from which a letter grade is derived.

The grading system is as follows:

TABLE A-3. Grading System

| Grade | | Points |
|-------|---|--------|
| A+ | = | 100 |
| A | = | 90-99 |
| B | = | 80-89 |
| C | = | 70-79 |
| D | = | 60-69 |
| F | = | 0-59 |



A P P E N D I X B

2000–2001 Beach Report Card Grades By County

| Santa Barbara County | Dry (04/00–10/00) | Dry (04/00–03/01) | Wet (04/00–03/01) |
|--|-----------------------------|-----------------------------|-----------------------------|
| Guadalupe Dunes | A | A | F |
| Ocean Beach at Santa Ynez River | C | B | F |
| Surf Beach (1/2 mile downcoast from Ocean Beach) | A | A | ns |
| Jalama Beach at Jalama Creek | D | D | F |
| Gaviota State Beach at Canada de las Cruces | F | D | F |
| Arroyo Quemada | F | F | F |
| Refugio State Beach at Canada del Refugio | D | F | F |
| El Capitan State Beach at Canada del Capitan | B | B | F |
| Sands at Coal Oil Point | A | A | F |
| Goleta Beach- 200 yds east of pier | C | B | F |
| Hope Ranch Beach at Las Palmas Creek | B | B | F |
| Arroyo Burro Beach at Arroyo Burro Creek | F | F | F |
| Leadbetter Beach at Honda Creek | A | A | F |
| East Beach at Mission Creek | A | D | F |
| East Beach at Sycamore Creek | A | A | F |
| Butterfly Beach | A | A | F |
| Hammond's Beach at Montecito Creek | B | B | F |
| Carpinteria City Beach- projection of Linden Av. | A | A | F |
| Carpinteria State Beach at Carpinteria Creek | A | C | F |
| Rincon Beach at Rincon Creek | C | B | F |



| Ventura County | Dry (04/00-10/00) | Dry (04/00-03/01) | Wet (04/00-03/01) |
|--|-----------------------------|-----------------------------|-----------------------------|
| Rincon Beach- 50 ft. south of creek mouth | C | D | F |
| Rincon Beach- 100 yds. south of creek mouth | B | B | F |
| Rincon Beach- at end of footpath to beach | A | A | F |
| La Conchita Beach at Ocean View Rd. drain | A+ | A | C |
| Mussel Shoals Beach- 100 yds. south of pier | A+ | A | C |
| Oil Piers Beach- south of Mobil Pier Rd. | A+ | A | F |
| Hobson County Park- across from the stairs | A+ | A | C |
| Rincon Parkway North at Javon Canyon | A+ | A | D |
| Faria County Park at Padre Juan creek | A+ | A | C |
| Mandos Cove | A+ | A | F |
| Solimar Beach- north, at A Lease Canyon | A | A | F |
| Solimar Beach- south, mid-colony near drain mouth | A+ | A | F |
| Emma Wood State Beach- 50 yds. south of first drain | A+ | A | D |
| Seaside Wilderness Park- 400 yds. north of Ventura River | A+ | A | B |
| Surfer's Point at Seaside | C | B | F |
| Promenade Park- projection of Figueroa St. | A+ | A | F |
| Promenade Park- projection of Paseo del Playa | A+ | A | F |
| Promenade Park- projection of Oak St. | B | A | F |
| Promenade Park- projection of California St. | A | B | F |
| San Buenaventura Beach at Kalorama drain | A | A | F |
| San Buenaventura Beach at Sanjon drain | C | C | F |
| San Buenaventura Beach at Dover Ln. drain | A+ | A | F |
| San Buenaventura Beach at Weymouth Ln. drain | A+ | A | A |
| Marina Park- north of the playground | A | A | A |
| Peninsula Beach- upcoast from south jetty | B | B | F |
| South Jetty Beach | A+ | A | F |
| Surfer's Knoll | A+ | A+ | F |



| Ventura County (continued) | Dry (04/00-10/00) | Dry (04/00-03/01) | Wet (04/00-03/01) |
|--|------------------------------|------------------------------|------------------------------|
| McGrath State Beach- 1/2 mi. north of Gonzales Rd. | A | A | F |
| McGrath State Beach- projection of Gonzales Rd. | A | A | F |
| McGrath State Beach- Go Cart track | A+ | A+ | F |
| Mandalay County Park- projection of 5th St. (south of drain) | A | A | F |
| Mandalay County Park- projection of Channel Way | A+ | A+ | F |
| Mandalay County Park- projection of Outrigger Way | A+ | A+ | F |
| Oxnard Shores- projection of Amalfi Way | A+ | A | F |
| Oxnard State Beach- projection of Falkirk Ave. | A+ | A+ | F |
| Oxnard State Beach- projection of Starfish Dr. | A+ | A | F |
| Hollywood Beach- projection of La Crescenta St. | A+ | A+ | F |
| Hollywood Beach- projection of Los Robles St. | A+ | A+ | F |
| Channel Islands Harbor- Hobie Beach at Lakeshore Dr. | F | F | F |
| Channel Islands Harbor Beach Park at Hollywood Blvd. | F | F | F |
| Channel Islands Harbor Beach Park at end of rocks, harbor entrance | A+ | A | ns |
| Silverstrand- projection of San Nicholas Ave. | A | A | F |
| Silverstrand- projection of Santa Paula Dr. | A | A | F |
| Silverstrand- La Jenelle (at Sawtelle Ave.) | A+ | A | F |
| Port Hueneme Beach Park- 50 yds. north of fishing pier | A | A | F |
| Ormond Beach- 50 yds. south of J Street drain | A+ | A | F |
| Ormond Beach- 50 yds. north of Oxnard Industrial drain | A | B | F |
| Ormond Beach- projection of Arnold Rd. | A+ | A | A |
| Point Mugu Beach | A+ | A+ | F |
| Thornhill Broome Beach at La Jolla Canyon | A+ | A+ | A |
| Sycamore Cove Beach- 50 yds. so. of Sycamore Canyon Creek | A | A | C |
| Deer Creek Beach- 50 yds. south of creek | A | A | F |
| County Line Beach- 50 yds. south of creek | A+ | A | F |
| Staircase Beach | A+ | A+ | B |



| Los Angeles County | Dry (04/00–10/00) | Dry (04/00–03/01) | Wet (04/00–03/01) |
|--|------------------------------|------------------------------|------------------------------|
| Leo Carrillo Beach | A+ | A | F |
| Nicholas Canyon Beach- 33 yds. west of lifeguard tower | A | A | F |
| Broad Beach* | A+ | A+ | ns |
| Trancas Beach entrance | A | A | F |
| Westward Beach | A+ | A | D |
| Paradise Cove | A | B | F |
| Latigo Canyon Creek entrance | B | B | F |
| Corral State Beach* | A | A | ns |
| Puerco Beach- at lifeguard station by bridge | A+ | A | F |
| Surfrider Beach at Malibu Colony fence | C | C | F |
| Surfrider Beach (second point)- weekly* | F | F | ns |
| Surfrider Beach (breach location)- daily | F | F | F |
| Malibu Pier - 50 yards east | C | C | F |
| Big Rock Beach | F | F | F |
| Topanga State Beach | A | B | F |
| Will Rogers Beach- PCH and Sunset Bl., 400 yards east | A | A | F |
| Will Rogers Beach- east of Bel Air Bay Club | B | B | F |
| Will Rogers Beach- Pulga Canyon storm drain, 50 yds east | A | A | F |
| Will Rogers Beach- Temescal Canyon | C | C | F |
| Will Rogers State Beach- Santa Monica Canyon | F | F | F |
| Santa Monica Beach- projection of San Vicente Bl.* | A | A | ns |
| Santa Monica Beach- projection of Montana Av. | A | A | F |
| Santa Monica Beach- projection of Arizona | A | A | F |
| Santa Monica Municipal Pier - 50 yards downcoast | B | B | F |
| Santa Monica Beach at Pico/Kenter storm drain | B | C | F |
| Santa Monica Beach- projection of Strand St. | A | A | F |
| Ocean Park Beach- Ashland Av. storm drain, 50 yds north* | A+ | A+ | ns |

*Locations no longer monitored as of September 2000.



| Los Angeles County (continued) | Dry (04/00-10/00) | Dry (04/00-03/01) | Wet (04/00-03/01) |
|--|------------------------------|------------------------------|------------------------------|
| Ocean Park Beach- Ashland Av. storm drain, 50 yds south | A | A | F |
| Venice Beach- projection of Brooks Av. | A | A | F |
| Venice Beach- projection of Windward Av., 50 yds north | A | A | D |
| Venice Fishing Pier - 50 yards south | A | A | C |
| Venice Beach- projection of Topsail St. | B | A | F |
| Marina del Rey, Mothers' Beach- south end of swim area* | D | D | ns |
| Marina del Rey, Mothers' Beach- playground | A | A | F |
| Marina del Rey, Mothers' Beach- north end of swim area* | D | D | ns |
| Marina del Rey, Basin H- Boat Launch* | F | F | ns |
| Dockweiler Beach- 50 yds south of Ballona Creek entrance | A | A | F |
| Dockweiler State Beach- projection of Culver Bl. | A | A | F |
| Dockweiler State Beach- south of D&W jetty | A | A | C |
| Dockweiler Beach- Imperial Hwy storm drain, 50 yds north | A | A | F |
| Dockweiler Beach- opposite Hyperion Treatment Plant | A | A | C |
| Dockweiler Beach- projection of Grand Av. | A | A | F |
| Manhattan Beach- projection of 40th St. | A | A | B |
| Manhattan Beach Pier- 50 yards south | A | A | A |
| Hermosa Beach- projection of 26th St. | A+ | A | A |
| Hermosa Beach Pier- 50 yards south | A+ | A+ | C |
| Herondo Street storm drain- 50 yards north | B | B | F |
| Redondo Municipal Pier- 50 yards south | B | C | D |
| Redondo Beach- projection of Topaz St., north of jetty | B | A | D |
| Redondo Beach- projection of Avenue I | A | A | B |
| Malaga Cove, Palos Verdes Estates- daily | A+ | A | A |
| Malaga Cove, Palos Verdes Estates- weekly | A+ | A+ | F |
| Palos Verdes (Bluff) Cove, Palos Verdes Estates | A | A | A+ |
| Long Point, Rancho Palos Verdes | A | A | F |

(continued)



| Los Angeles County (continued) | Dry (04/00-10/00) | Dry (04/00-03/01) | Wet (04/00-03/01) |
|--|------------------------------|------------------------------|------------------------------|
| Abalone Cove Shoreline Park | A | A | B |
| Portuguese Bend Cove, Rancho Palos Verdes | A+ | A+ | A |
| Royal Palms State Beach | B | A | B |
| Wilder Annex, San Pedro | A | A | ns |
| Cabrillo Beach- oceanside | B | A | A |
| Cabrillo Beach- harborside at boat launch | A | A | F |
| Cabrillo Beach- harborside at lifeguard tower | F | F | F |
| Avalon Beach- btwn. Tuna Club & Busy Bee Rest. | B | B | ns |
| Avalon Beach- btw. Pier & Busy Bee Rest (2/3 distance) | F | F | ns |
| Avalon Beach- btw. Pier & Busy Bee Rest (1/3 distance) | F | F | ns |
| Avalon Beach- btw. storm drain & Pier (2/3 distance) | F | F | ns |
| Avalon Beach- btw. storm drain & Pier (1/3 distance) | F | F | ns |
| Long Beach City Beach- projection of 3rd Place | F | F | ns |
| Long Beach City Beach- projection of 5th Place | B | C | ns |
| Long Beach City Beach- projection of 10th Place | D | C | ns |
| Long Beach City Beach- projection of 16th Place | D | C | ns |
| Long Beach City Beach- projection of Molino Ave. | B | B | ns |
| Long Beach City Beach- projection of Coronado Ave. | A | A | ns |
| Long Beach City Beach- projection of 36th Place | C | B | ns |
| Belmont Pier - westside | C | B | ns |
| Belmont Pier - mid-pier | ns | ns | ns |
| Belmont Pier - eastside | B | B | ns |
| Long Beach City Beach- projection of Prospect Ave. | A | A | ns |
| Long Beach City Beach- projection of Granada Ave. | D | C | ns |
| Long Beach City Beach- projection of 54th Place | D | C | ns |
| Long Beach City Beach- projection of 55th Place | A+ | A | ns |
| Long Beach City Beach- projection of 62nd Place | A | A | ns |



| Los Angeles County (continued) | Dry (04/00-10/00) | Dry (04/00-03/01) | Wet (04/00-03/01) |
|---|----------------------|----------------------|----------------------|
| Long Beach City Beach- projection of 72nd Place | B | B | ns |
| Alamitos Bay, 56th Place | A | A | ns |
| Alamitos Bay, Shore float | A+ | A | ns |
| Alamitos Bay, 1st & Bayshore | A | A | ns |
| Alamitos Bay, 2nd St. Bridge & Bayshore | B | B | ns |
| Los Cerritos Channel, Mothers' Beach | C | C | ns |



| Orange County | Dry (04/00-10/00) | Dry (04/00-03/01) | Wet (04/00-03/01) |
|---|----------------------|----------------------|----------------------|
| Seal Beach- projection of 1st Street | B | B | F |
| Seal Beach- projection of 8th Street | A | A | D |
| Seal Beach- projection of 14th Street | A+ | A+ | C |
| Surfside Beach- projection of Sea Way | A | A | B |
| Sunset Beach- projection of Broadway | A+ | A+ | B |
| Bolsa Chica State Beach- south of Warner Ave. | A | A | D |
| Bolsa Chica State Beach- at Lifeguard HQ | A | A | D |
| Huntington City Beach- Bluffs, at Seapoint Av. | A | A | D |
| Huntington City Beach- projection of 17th Street | A | A | F |
| Huntington City Beach- projection of Jack's Snack Bar | A | A | D |
| Huntington State Beach- power plant, so. of Newland St. | C | B | F |
| Huntington State Beach- projection of Magnolia Street | D | C | F |
| Huntington State Beach- projection of Brookhurst | B | C | F |
| Santa Ana River Mouth- north side | A | A | F |
| Newport Beach- projection of Orange Street | A | A | F |
| Newport Beach- projection of 52nd/53rd Street | A | A | B |
| Newport Beach- projection of 38th Street | A | A | A |
| Newport Beach- projection of 15th/16th Street | A | A | B |
| Balboa Beach- Balboa Pier, north side | A | A | B |
| Balboa Beach- The Wedge | A+ | A+ | B |
| Huntington Harbour, Mother's Beach | B | B | F |
| Huntington Harbour, Trinidad Lane Beach | A+ | A | F |
| Huntington Harbour, Sea Gate | A | A | B |
| Huntington Harbour, Humboldt Beach | A | A | F |
| Huntington Harbour, Davenport Beach | A | A | F |
| Huntington Harbour, 11th Street Beach | A | C | F |
| Newport Bay, Newport Dunes-North | F | D | F |



| Orange County (continued) | Dry (04/00–10/00) | Dry (04/00–03/01) | Wet (04/00–03/01) |
|--|------------------------------|------------------------------|------------------------------|
| Newport Bay, Newport Dunes-East | B | B | F |
| Newport Bay, Newport Dunes-Middle | A | A | F |
| Newport Bay, Newport Dunes-West | A | B | F |
| Newport Bay, Bayshore Beach | B | A | F |
| Newport Bay, Via Genoa Beach- Lido Isle | A+ | A | F |
| Newport Bay, Lido Yacht Club Beach- Lido Isle | A | A | F |
| Newport Bay, Garnet Avenue Beach- Balboa Island | B | B | F |
| Newport Bay, Sapphire Avenue Beach- Balboa Island | A | B | F |
| Newport Bay, Abalone Avenue Beach- Balboa Island | B | A | F |
| Newport Bay, Park Avenue Beach- Balboa Island | A | A | F |
| Newport Bay, Onyx Avenue Beach- Balboa Island | A | B | F |
| Newport Bay, Ruby Avenue Beach- Balboa Island | A+ | A+ | F |
| Newport Bay, Grand Canal- Balboa Island | A | A | F |
| Newport Bay, 43rd Street Beach | F | F | F |
| Newport Bay, 38th Street Beach | D | C | F |
| Newport Bay, 19th Street Beach | A | A | F |
| Newport Bay, 15th Street Beach | A | A | F |
| Newport Bay, 10th Street Beach | A | A | F |
| Newport Bay, Alvarado/ Bay Isle Beach | A | A | F |
| Newport Bay, N Street Beach | A+ | A+ | F |
| Newport Bay, Harbor Patrol Beach | B | B | F |
| Newport Bay, Rocky Point Beach | A | A | F |
| Corona del Mar- Corona del Mar Beach, 200 yds. so. of breakwater | A | A | B |
| Corona del Mar Beach (daily) | A | A | D |
| Corona del Mar- Little Corona Beach at Poppy Ave. | B | B | F |
| Pelican Point | A | A | B |
| Crystal Cove at Los Trancos Canyon | A | A | A |

(continued)



| Orange County (continued) | Dry (04/00-10/00) | Dry (04/00-03/01) | Wet (04/00-03/01) |
|--|------------------------------|------------------------------|------------------------------|
| Crystal Cove (daily) | A+ | A+ | B |
| Muddy Creek Beach | A+ | A+ | A |
| El Morro Beach at El Morro Canyon | A | A | A |
| Emerald Bay- mid-cove | A | A | A |
| Laguna Beach- Crescent Bay Beach | A+ | A+ | A |
| Laguna Beach- Laguna Main Beach | A | B | D |
| Laguna Beach- Projection of Laguna Hotel | A | A | D |
| Laguna Beach- Projection of Bluebird Canyon | A | B | D |
| Laguna Beach- Victoria Beach at Dumond Dr. | A | A | C |
| Laguna Beach- Blue Lagoon near Lagunita Pl. | A | A | B |
| Laguna Beach- Treasure Island Pier (weekly) | A | A+ | ns |
| Laguna Beach- Treasure Island Pier | ns | ns | ns |
| Laguna Beach- Treasure Island Sign | A | A | D |
| South Laguna- Aliso Creek Beach, north | A | A | F |
| South Laguna- Aliso Creek Beach, middle | A | A | F |
| South Laguna- Aliso Creek Beach, south | A+ | A | D |
| South Laguna- Camel Point at Camel Point Dr. | A+ | A+ | D |
| South Laguna- Table Rock at Table Rock Dr. | A+ | A+ | C |
| South Laguna- Laguna Lido Apt. | A+ | A+ | B |
| South Laguna- 9th Av., 1000 Steps Beach | A | A | B |
| Three Arch Bay- mid-cove | A | A | B |
| Monarch Beach- north | B | A | C |
| Monarch Beach- south | B | B | F |
| Salt Creek Beach | A | A | C |
| Dana Point- Dana Strand Beach | A+ | A | A |
| Dana Point- Marine Institute Beach | A | A | B |
| Dana Point- North Beach, Doheny (weekly) | C | F | F |



| Orange County (continued) | Dry (04/00-10/00) | Dry (04/00-03/01) | Wet (04/00-03/01) |
|--|------------------------------|------------------------------|------------------------------|
| Dana Point- North Beach, Doheny | C | F | F |
| Dana Point- Doheny Beach, 250 yds. no. of San Juan Creek | B | F | F |
| Dana Point- San Juan Creek, ocean interface | F | F | F |
| Dana Point- Doheny Beach, 250 yds. so. of San Juan Creek | F | F | F |
| Dana Point- 1000' south of SERRA outfall | D | F | F |
| Dana Point- 2000' south of SERRA outfall | C | D | F |
| Dana Point- 3000' south of SERRA outfall | D | F | F |
| Dana Point- 4000' south of SERRA outfall | C | C | F |
| Dana Point- 5000' south of SERRA outfall | B | C | F |
| Dana Point- 7500' so. of SERRA outfall, proj. of Camino Estrella | A+ | B | F |
| Dana Point- 10000' so. of SERRA outfall, 35505 Beach Road | A | B | F |
| San Clemente- 14000' so. of SERRA outfall, (Poche Beach) | F | F | F |
| San Clemente- 20000' so. of SERRA outfall, proj. of Avenida Pico | A | A | F |
| San Clemente- Lifeguard building, no. of pier | A | A | F |
| San Clemente- Avenida Calafia | A | A | D |
| San Clemente- Las Palmeras | A | A | C |
| Dana Point Harbor, Baby Beach- West End | F | F | F |
| Dana Point Harbor, Baby Beach- Buoy Line | F | F | F |
| Dana Point Harbor, Baby Beach- Swim Area | F | F | F |
| Dana Point Harbor, Baby Beach- East End | D | F | F |
| Dana Point Harbor, Guest Dock-end, West Basin | B | A | F |
| Dana Point Harbor, Youth Dock, West Basin | A | A | C |



| San Diego County | Dry (04/00–10/00) | Dry (04/00–03/01) | Wet (04/00–03/01) |
|---|-----------------------------|-----------------------------|-----------------------------|
| San Onofre State Beach, San Mateo Creek | A+ | A+ | ns |
| San Onofre State Beach, San Onofre Creek | A | A | ns |
| Camp Pendleton, Camp del Mar (near 9th St.) | A+ | A+ | ns |
| Oceanside, Harbor Beach (projection of Harbor Dr.) | A+ | A+ | A |
| Oceanside, San Luis Rey River outlet | C | C | F |
| Oceanside, projection of Surfrider Way | A | A | A |
| Oceanside, projection of Pier View Way | A | A | A |
| Oceanside, projection of Wisconsin St. | A | A | ns |
| Oceanside, projection of Tyson St. | A | A | A |
| Oceanside, projection of Forester St. | A+ | A+ | C |
| Oceanside, 500' N. of Loma Alta Creek Outlet | A+ | A+ | B |
| Oceanside, Buccaneer Beach (at Loma Alta Creek) | A+ | A | F |
| Oceanside, projection of Cassidy St. | A | A | D |
| Oceanside, St. Malo Beach (downcoast from St. Malo Rd.) | A+ | A+ | F |
| Oceanside, Buena Vista Lagoon Outlet | A | A | ns |
| Carlsbad, projection of Carlsbad Village Dr. | A+ | A+ | ns |
| Carlsbad, projection of Tamarack Av. | A | A | ns |
| Carlsbad, Aqua Hedionda (boat launch) | B | B | ns |
| Carlsbad, projection of Cerezo Dr. | A+ | A+ | A+ |
| Carlsbad, projection of Palomar Airport Rd. | A+ | A+ | A+ |
| Carlsbad, Encina Creek outlet | A+ | A | C |
| Carlsbad, projection of Ponto Dr. | A+ | A+ | A+ |
| Carlsbad, projection of Poinsettia Ln. | A | A | A+ |
| Carlsbad, Batiquitos Lagoon outlet | A+ | A | ns |
| Leucadia, Beacons Beach (proj. of Leucadia Blvd.) | A+ | A+ | ns |
| Encinitas, Moonlight Beach (Cottonwood Creek outlet) | F | F | D |
| Encinitas, Swami's Beach (Seacliff Park) | A+ | A+ | ns |



| San Diego County (continued) | Dry (04/00-10/00) | Dry (04/00-03/01) | Wet (04/00-03/01) |
|---|------------------------------|------------------------------|------------------------------|
| Encinitas, San Elijo State Park (proj. of Beethoven Av.) | A | A | ns |
| Encinitas, San Elijo State Park (proj. of Liverpool Dr.) | A+ | A+ | ns |
| Cardiff State Beach, San Elijo Lagoon outlet | A | A | D |
| Cardiff State Beach Charthouse parking (slight S. of Kilkeny) | A+ | A | ns |
| Cardiff State Beach, Las Olas (100 yds. south of Charthouse) | A+ | A | ns |
| Cardiff State Beach, Seaside State Park | A+ | A+ | ns |
| Solana Beach, Tide Beach Park (proj. of Solana Vista Dr.) | A+ | A+ | ns |
| Solana Beach, Fletcher Cove (proj. of Lomas Santa Fe Dr.) | A | A | ns |
| Solana Beach, Seascape Surf Beach Park | A+ | A+ | ns |
| Del Mar, San Dieguito River Beach | A | A | ns |
| Del Mar, projection of 17th Street | A+ | A+ | ns |
| Del Mar, projection of 15th Street | A+ | A+ | ns |
| Del Mar, projection of 12th Street | B | B | ns |
| Torrey Pines, Los Peñasquitos Lagoon outlet | A | A | ns |
| La Jolla (north), Black's Beach (end of trail path) | A | A+ | ns |
| La Jolla Shores, Scripps Pier (south side) | A+ | A | ns |
| La Jolla Shores, El Paseo Grande (near Scripps) | A | A+ | ns |
| La Jolla Shores, projection of Ave. Del La Playa | A | A | ns |
| La Jolla, La Jolla Cove | B | B | ns |
| La Jolla, Children's Pool | F | F | ns |
| La Jolla, Coast Blvd. (north of Nicholson Pt.) | B | B | ns |
| La Jolla, Ravina (south of Nicholson Pt.) | B | B | ns |
| La Jolla, projection of Vista De La Playa | A+ | A+ | ns |
| La Jolla, Windansea Beach (proj. of Bonair St.) | A+ | A+ | ns |
| La Jolla, projection of Playa Del Norte | A+ | A+ | ns |
| La Jolla, projection of Palomar Av. | A | A | ns |
| La Jolla, projection of Bird Rock Av. | A | A | ns |

(continued)



| San Diego County (continued) | Dry (04/00–10/00) | Dry (04/00–03/01) | Wet (04/00–03/01) |
|---|------------------------------|------------------------------|------------------------------|
| Pacific Beach, P.B. Point (projection of Linda Way) | B | B | ns |
| Pacific Beach, P.B. Point (100 yds. downcoast of Linda Way) | F | F | ns |
| Pacific Beach, Tourmaline Surf Park (proj. of Tourmaline St.) | A | A | ns |
| Pacific Beach, Crystal Pier (projection of Garnet) | B | B | ns |
| Pacific Beach, projection of Missouri St. | A | A | ns |
| Pacific Beach, projection of Grand Av. | A | A | ns |
| Mission Beach, projection of Capistrano Place | A+ | A+ | ns |
| Ocean Beach, San Diego River outlet (Dog Beach) | B | B | F |
| Ocean Beach, Ocean Pier (proj. of Narragansett Av) | A | A | ns |
| Ocean Beach, projection of Bermuda Ave. | C | B | ns |
| Sunset Cliffs, projection of Ladera Street | A | A | ns |
| Sunset Cliffs, downcoast of Newbreak Beach | A+ | A+ | ns |
| Point Loma, Point Loma Treatment Plant | A+ | A+ | ns |
| Point Loma, Lighthouse | A | A | ns |
| Coronado at North Beach (near Navy fence) | A | A | F |
| Coronado, projection of Loma Ave. | A+ | A+ | F |
| Coronado, projection of Ave. del Sol | B | B | F |
| Coronado, Silver Strand | B | A | F |
| Imperial Beach, projection of Carnation Av. | C | C | F |
| Imperial Beach, projection of Palm Av. | A+ | A+ | ns |
| Imperial Beach, Imperial Beach Pier (north side) | A+ | A | F |
| Imperial Beach, proj. of Imperial Beach Blvd. | A | D | F |
| Imperial Beach, projection of Cortez Av. | A | D | F |
| Imperial Beach. south end of Seacoast Dr. | C | D | F |
| Tijuana Slough NWRS, 3/4 mi. no. of Tijuana River | B | B | F |
| Tijuana Slough NWRS, Tijuana Rivermouth | C | F | F |
| Border Field State Park, proj. of Monument Rd. | B | F | F |



| San Diego County (continued) | Dry (04/00–10/00) | Dry (04/00–03/01) | Wet (04/00–03/01) |
|---|------------------------------|------------------------------|------------------------------|
| Border Field State Park, Border Fence (north side) | C | F | F |
| Mission Bay, Mariners Basin (proj. of Balboa Ct.) | A+ | A | ns |
| Mission Bay, Ventura Cove | B | B | ns |
| Mission Bay, Bonita Cove (north cove) | D | F | F |
| Mission Bay, Bahia Point (NE side) | F | F | F |
| Mission Bay, Santa Barbara Cove (proj. Santa Barbara Pl.) | B | B | F |
| Mission Bay, San Juan Cove (west of boat launch) | A | B | F |
| Mission Bay, Santa Clara Cove (proj. of Portsmouth Ct.) | B | B | ns |
| Mission Bay, Sail Bay (proj. of Whitting Ct.) | A | B | F |
| Mission Bay, Fanuel Park (proj. of Fanuel St.) | C | D | F |
| Mission Bay, Riviera Shores (proj. of La Cima Dr.) | B | B | F |
| Mission Bay, Crown Point Shores | B | C | F |
| Mission Bay, Wildlife Refuge near fence (proj. of Lamont St.) | C | C | F |
| Mission Bay, Campland (west of Rose Creek) | C | F | F |
| Mission Bay, DeAnza Cove (western shore) | A | A | F |
| Mission Bay, DeAnza Cove (mid-cove) | F | F | F |
| Mission Bay, Visitor's Center (proj. of Clairemont Dr.) | F | F | F |
| Mission Bay, Leisure Lagoon | B | B | F |
| Mission Bay, Pacific Passage | C | D | F |
| Mission Bay, Tecolote Creek outlet | C | C | F |
| Mission Bay, Perez Cove | A | A | F |
| Mission Bay, Fiesta Island Bridge (south side) | B | C | A |
| Mission Bay, Quivera Basin (W. basin) at Lifeguard station | A | A | B |
| Mission Bay, Hidden Anchorage | B | D | F |
| Mission Bay, Vacation Isle (btwn Ingram St. and south cove) | A | A | F |
| San Diego Bay, north of Kellogg St. | A | B | ns |
| San Diego Bay, Shelter Island (Shoreline Beach Park) | D | D | ns |

(continued)



| San Diego County (continued) | Dry (04/00–10/00) | Dry (04/00–03/01) | Wet (04/00–03/01) |
|---|------------------------------|------------------------------|------------------------------|
| San Diego Bay, Spanish Landing Park beach | B | B | ns |
| San Diego Bay, Bayside Park (proj. of Bayside Pkwy.) | C | C | ns |
| San Diego Bay, Silver Strand | A+ | A+ | ns |
| San Diego Bay, Glorietta Bay Park at boat launch | A | A | ns |
| San Diego Bay, Tidelands Park (proj. of Mullinix Dr.) | C | C | ns |



A P P E N D I X C

Percentage of Exceedances by Bacteria Indicator of the State's Beach Bathing Water Standards during dry weather from April 2000 through March 2001*

Total Number of Beach Sample Days = 21,100

| Parameter | Total number of beach sample days with an exceedance(s) | Percent of beach sample days with an exceedance(s) | Percent of total exceedances |
|-------------------------------|---|--|------------------------------|
| Single Exceedance | | | |
| Total Coliform (T) | 48 | .2% | 2.7% |
| Fecal Coliform (F) | 172 | .8% | 9.5% |
| Enterococcus (E) | 861 | 4.1% | 47.7% |
| Total: Fecal Ratio (R) | 89 | .4% | 4.9% |
| Multiple Exceedances | | | |
| T+F | 29 | .1% | 1.6% |
| T+E | 19 | .1% | 1% |
| T+R | 0 | 0% | 0% |
| F+E | 132 | .6% | 7.3% |
| F+R | 184 | .9% | 10.1% |
| E+R | 32 | .2% | 1.7% |
| T+F+E | 21 | .1% | 1.2% |
| T+F+R | 12 | .1% | .7% |
| T+E+R | 0 | 0% | 0% |
| F+E+R | 168 | .8% | 9.3% |
| T+F+E+R | 37 | .2% | 2.1% |
| Total | 1,804 | 8.6% | 100% |

**This analysis utilized data collected by Santa Barbara, Ventura, Los Angeles, Orange and San Diego County and City public agencies.*



Credits

COPY EDITORS: Mary Leath, Kelley Skumautz

DATA COMPILATION AND ANALYSIS: James Alamillo

DESIGN: Chris Prenter

PRODUCTION: Peter Tatikian

REPORT RESEARCH AND COPY: James Alamillo

SPANISH TRANSLATION: Claudia Prenter

TECHNICAL EDITORS: Mark Gold, D. Env., Mitzy Taggart

WEB SITE MANAGEMENT: Tom Fleming

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